

THE SENSE OF SPACE

AN ESSAY ON SPATIAL PERCEPTION AND EMBODIMENT IN THE SPIRIT OF
MERLEAU-PONTY'S *PHENOMENOLOGY OF PERCEPTION*

by

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The Sense of Space. An Essay on Spatial Perception and Embodiment in the Spirit of Merleau-Ponty's *Phenomenology of Perception*.

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Abstract

Our sense of space depends on our embodiment, specifically on a topology of the lived body.

Spatial perception does not recover static spatial dimensions that are specified outside perception, as some traditional theories claim. Chapter one shows this through studies that criticise Descartes's and Berkeley's accounts of depth perception, and trace their continuing influence. A study of *The Phenomenology of Perception* shows how Merleau-Ponty's phenomenology demands a new account that conceives depth and spatial perception as phenomena motivated by our embodiment.

Chapter two develops this new account. Merleau-Ponty's phenomenology and results in psychology show that there is a body schema, and that it shapes perception. A study that begins with binocular vision shows how the body schema shapes depth perception, given that perception depends on a place that supports our motor-perceptual relations to things. Another study shows that the body schema is a primordial habit. This means that the body schema—and hence spatial perception—can be labile, developmental, continuous with a world of human meaning, and that exterior places can be incorporated into our lived bodies and into our sense of space.

Chapter three conceives webs of relations between parts of the lived body, things, others and places as topologies of the lived body that are specified in the body schema, and that give sense to spatial perception. A study of orientation perception in weightlessness reveals a topology that gives sense to orientation perception. Another study suggests a topology that gives sense to distance perception. These studies show how such topologies: are motivated by facts about the lived body that acquire meaning within the body schema, express a perceptual concern for our embodied being in the world, and relate us to place.

In the conclusion, I suggest that spatial perception crucially reflects our relation to others, since the body schema, and hence the topology of the lived body, are rooted in habit, and develop through our embodiment within a social and cultural world. This suggests a program of future research, and that a phenomenological account of spatial perception is integral to existential understandings of our relations to others.

In the face of these disturbances they scrupled to stain the divine soul only to the extent that this was absolutely necessary, and so they provided a home for the mortal soul in another place in the body, away from the other, once they had built an isthmus as boundary between the head and the chest by situating a neck between them to keep them apart.

...

Now we ought to think of the most sovereign part of our soul as god's gift to us, given to be our guiding spirit. This, of course, is the type of soul that, as we maintain, resides in the top part of our bodies. It raises us up away from the earth and toward what is akin to us in heaven, as though we are plants grown not from the earth but from heaven. In saying this, we speak absolutely correctly. For it is from heaven, the place from which our souls were originally born, that the divine part suspends our head, that is, our root, and so keeps our whole body upright.

—Plato, *Timaeus*, 69e and 90a

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List of Abbreviations

Abbrev.	Title	Citation Form
<i>EM</i>	Merleau-Ponty, "Eye and Mind" (In <i>The Primacy of Perception</i>)	<i>EM</i> [page #]
<i>NTV</i>	Berkeley, <i>An Essay Towards a New Theory of Vision</i> (In <i>Works on Vision</i>)	<i>NTV</i> §[paragraph #]
<i>OE</i>	Merleau-Ponty, <i>L'Oeil et l'Esprit</i>	<i>OE</i> [page #]
<i>PdIP</i>	Merleau-Ponty, <i>Phénoménologie de la Perception</i>	<i>PdIP</i> [page #]
<i>PP</i>	Merleau-Ponty, <i>Phenomenology of Perception</i>	<i>PP</i> [page #]
<i>Principles</i>	Berkeley, <i>A Treatise Concerning the Principles of Human Knowledge</i>	<i>Principles</i> §[paragraph #]
<i>SB</i>	Merleau-Ponty, <i>The Structure of Behaviour</i>	<i>SB</i> [page#]
<i>SdC</i>	Merleau-Ponty, <i>La Structure du Comportement</i>	<i>SdC</i> [page #]
<i>VL</i>	Berkeley, <i>The Theory of Vision, or Visual Language Vindicated and Explained</i> (In <i>Works on Vision</i>)	<i>VL</i> §[paragraph #]

Introduction

We are with one another in space. Space stands between me and you and between everything that you and I have encountered or will encounter; and space holds us together amidst things. This is a basic fact of our existence. We do not perceive space itself as such, but every thing and person that we perceive, we perceive as being in space and as having spatial dimensions: other people and things appear in depth and have depth, height and width, as well as an orientation; and our bodies have a height, depth, width and orientation for others and for ourselves.¹ We move about things and others, and they move about us, and we perceive this motion. We are in space with one another, and we can sense each other's spatiality as well as the spatiality of things.

In his *Confessions*, Augustine remarks that he knows well enough what time is, provided that nobody asks him.² But a similar difficulty holds for space. I am sitting in a room writing. When I turn my head to look out the window, I know perfectly well where my papers are, even though I am not looking at them. I know where I am, where my body is, where my legs and torso are, even though they are out of sight; I know where things outside the window are, where my room is located in the city, and so on. I know what it is for myself and things to be in space and to be perceived in space, and I know what it means to say that they are in this way.

¹ Throughout this work I conceive orientation as well as motion as dimensions of perceived space.

I seem to know what space is, then, or at least I know how to deal with the spatiality of things in my perceptual life. Yet it is difficult to say what space is, or even what sort of thing space is. I am not even sure that I should call space a thing. Most of the time when I use the word “thing,” I am talking about a being outside me that I can point to, or, perhaps by analogy, a concept or topic that can be pointed out in discussion or thought. I cannot point to space, because space is everywhere, it contains everything, it is the very basis that separates one thing from another. Pointing happens in space and pointing points to some part of space, but it cannot grasp space as a whole because it must already be in space. Space does not seem to be a big container either, for all the containers that I am familiar with must be in space in order to have boundaries with which to contain some other thing. And so on—each time I try and say that space is like such and such a structure or thing, my claim takes itself apart because the structures or things that I appeal to depend on space and therefore cannot explain space.

But space is more than some ‘thing’ or system that is beyond us and that is puzzlingly difficult to explain. Space is between us and with us, and we are with space and with one another. Space as it matters to life—lived and perceived space—is ‘the’ space that I want to investigate. All presence of one being to another, or presence of one being to itself, is presence within space, a presence within which the being in question can accept incursions from and encounters with others, and incorporate incursions and encounters into the flow of life, such that the being in question can also partly absent itself from these incursions and the others that it encounters. Life, perception and cognition all depend on such relations of connection and disconnection, presence and

² *Confessions* XI.14.

absence, on incursions and encounters that are turned into the excursions and contacts of perceptual life. Life, perception and cognition must therefore be constituted within some sphere that provides the possibilities of relation that we in fact find in lived space. To the extent that living, perceiving and cognising beings constitute themselves, they are explicitly dependent on such spatial relations. So for such beings, spatial relations are inherently in question. For us, the interrelation between our identities as living, perceiving, cognising, philosophising beings and the identity of other beings, is manifest as an ontological issue in our experience of space. This has been shown, for example, by Sartre in *Being and Nothingness*, Heidegger in *Being and Time*, and Merleau-Ponty in the *Phenomenology of Perception* and “Eye and Mind.”

Outside of philosophical reflection, this ontological issue becomes manifest, for example, in the breakdown of our experience of space. When we cannot sort out the space around us, we get dizzy, disoriented, confused, even nauseous. Conversely, when we are physically sick, or confused, or wrapped up in troubles with others around us, the shape and texture of perceived space can change. Space can lose the usual transparency and order that set everyday life and point out the activities through which we identify ourselves. In a crisis, space can change into an opaque mire that closes in and forces us to confront our place and limits, that shows us that the step from here to there, which we usually make without trouble or any attention at all, is in fact a huge movement that is played out in a beyond that is integral to us. In malaise, space can close down—there is

no place to go, no point to anything, everything is everywhere the same.³ Perceived space as we live it is humanly meaningful, labile and susceptible of breakdowns.

This space that we live with, in and through, is my focus in this work. We do not need to think about it or puzzle over it to have a sense of it. Before we arrive at some conception of space as such, of space as it might be by itself, we have a sense of space: we sense things in space as spatial. Before we worry about how to conceive space, space already has a sense for us—a meaning—because we are conceived within space and live with each other within space. We have a sense of space. This is to say: we can sense the spatial dimensions of things, other people and the world; and space has a meaning for us. Were I writing in French, this work would be titled *Le Sens de l'Espace*, and in French this duality of meaning would be clear: “*sens*” refers both to meaning and sensation, and also direction. We retain this sense of direction in English when we refer to a shape or part as being sensed so that it fits into a larger whole in one way only. The space that we sense has a direction: to sense things as spatial is to have a sense of how things fit into a larger whole that orders the world around each one of us, and this fit is inherent to our sense of space. Lived, perceived space is not isotropic, it is not everywhere the same, like the space of mathematics—not even the bleakest of moods can erase the differences and polarisations that enliven perceptual space. The sun is above, the earth below, there are places for us to go, we do not encompass everything, there are differences beyond us in space, and things spread out giving space direction and fit. We sense space, and this means that the things that we sense in space fit together around us in the way that a

³ Cf. Leder's discussion of disease as closing in space and cutting off possibilities (Leder 1990, 79-83). Also see Heaton 1968.

sensed shape fits in a larger whole—paradoxically, we sense a space that encloses us, but the space that we sense fits within our perceptual life, it is sensed for us.

In this work I give an account of our sense of space, and by this I mean an account of how we sense things as spatial, such that they are ordered together within a fitting, directed whole that we call space, and such that space has a meaning for us in our life. To put it compactly, I am interested in giving an account of spatial perception in the lived world. I started from the fact that we are with one another in space, and I want to give an account of spatial perception that will be able to shed some light on the “we” that exists in “I”s who are with one another in space. To see how space matters to this “we,” it is necessary to see how space matters to the life of an “I,” and it is for this reason that I aim to give an account of how we sense space: how we perceive it, how space has meaning and direction.

This framing project leads to several conceptual and terminological points about space, perception and the body, which points focus my approach. In *Getting Back into Place*, Casey argues that the concept of space that is seized by our modern philosophical and scientific traditions is one that abstracts from the lived world and turns space into a pure system in which all points and dimensions are interchangeable. Our concept “space,” with its three orthogonal and interchangeable dimensions of height, depth and width, abstracts from the bodily dimensions—above-below, left-right, ahead-behind—that Casey gets back into through a description of our experience of place. Casey argues that we must return from discussions of space to discussions of body and place, since place is in

fact more fundamental than space, and the true dimensions of our involvement with the world are those of the body in place, not the three dimensions of Cartesian space.⁴

I agree with Casey's overall argument. My analysis of spatial perception will in fact expand on Casey's description of the body in place by showing how our perception of different spatial dimensions depends on the interrelation of different dimensions and organs of the lived body within place. However, the problem that frames my work is a problem about spatial perception, not a problem about the perception of place. When I look around, I perceive my place, my room. My room has a distinct 'placial physiognomy'—a front and back, a top and bottom, condensations and rarefactions of books, clutter and things that I want to deal with or ignore, that together give my room its distinct identity as my place of work. Precisely because my room's identity is that of a place of work, its 'placial physiognomy' dynamically unfolds in relation to my manner of being in my room. But this 'placial physiognomy' also reveals a 'spatial physiognomy' of my room—in the usual case, when I look at my room, things appear as having orientations, distances and locations. The placial and spatial 'physiognomies' of my room are different, though interrelated. Yet in perception I can separate the spatial aspects of my room from the aspects of the place that I see, even if spatiality is rooted in placiality (that is, even if the spatial orientation of things in my room depends on the way that my room is a place for work), and even if this separation stems from a tradition that detaches questions of spatial perception from questions of place. Casey's philosophical project seeks to get past our tradition and get us back to the place world through a profound and

⁴ Cf. Casey 1993, Casey 1991a, Casey 1991b. See section II in the chapter "Dimensions" in Casey 1993 for his descriptive account of the relation between place and body.

sweeping description of our cultural and bodily experience of place: he wants to get back to the place 'behind' space. My analysis of depth and orientation perception begins with a narrower encounter with the questions of spatial perception that are posed by our tradition. By engaging with these narrow questions and the phenomena on their own terms, guided and supported by the phenomenology of Merleau-Ponty, I will, among other things, show that the 'spatial physiognomy' of a place arises from the 'placial physiognomy' that it acquires in relation to the living topology of our embodiment, which inherently roots us in place. My project, then, takes a different approach to getting past our tradition, and I hope that this will add to Casey's project by deepening the account of the spatial perception of the body in place.

My argument, then, moves from the placeless space of our philosophical traditions and the laboratory, to lived space in place, from a pure structure of dimensions recovered by sensing minds, to a place filled with the earth from which we and others grow and build. The connection between these two sorts of space, as I have hinted, is the body. The traditions that turn place into space cannot get around the fact that our sense of space is ultimately rooted in our body and finite being. Merleau-Ponty has shown that perceived space has a meaning for our embodied being in the world, that space is sensed around us. To understand this is to understand that our perceptual relation to a space of things and others beyond us cannot be rooted in a fixed, abstract and idealised connection between our senses, our mind and dimensions that are fixed beyond us. The spatial dimensions that we perceive must already have a meaning for us, since our sense of space could only be given through bodies that are already of space in virtue of being fleshy and spread out.

yet essentially united in a perceptual life that puts us in contact with others beyond us who sustain and deny us.

Space as a container or system of absences and presences, connections and disconnections, then, reappears in some way ‘beneath’ my account. We are spread out in space—our physiological bodies occupy a bounded physical space—and this means that our lived bodies are of a space that we perceive. But these two spaces are not to be confused, and neither are these two senses of body; and the one is not the cause of the other. It is not in virtue of my being physically located in physical space that I am *here*, that I am “of” this space around me in the way that I am “of” this nation or “of” a certain belief. I am of perceived space and I am here in virtue of belonging to space in a certain way: space matters to me and it is sensed around me. My being “here” is a being that inherently excludes my being “there,” and thus “here” and “there” are related to my way of being. The spread from here to there spreads out in relation to my bodily being, and thus my body is of the space that spreads out and is sensed around me. It is true that my being *of* perceived space is rooted in my being *in* physical space, but the former is not reducible to the latter. We do not experience a body that moves in the space of physics, a body whose motions would be plotted in a dimensional system outside it; we experience a lived body for which things are already in place (when things are going well), a body that is already of the earthly space in which it plods along. Throughout this work I will distinguish the body that we experience from the physiological and physical body that appears under the abstracting lens of the sciences. I follow Merleau-Ponty and his

tradition in calling the body as we experience it “the lived body.”⁵ Spatial perception as we find it in the lived body, then, is my main focus.

But even if we distinguish lived, perceived space from physical space, and the lived body from the physiological body, the one depends on the other. The lived body that we experience is also a physiological body. In virtue of our manner of embodiment (our process of living), our embodiment (our carnal locus of being) is that which is given in the lived body. Our embodiment, then, is given in the process that shapes the lived body, and this shaping is constrained by facts of the physiological body. Once we see that the lived body is an embodiment, a process of being in the world that is rooted in facts of the physiological body, facts of physiology appear not as causes, but as motives that give meaning to the lived body. The fact that we need to eat is a motive of our eating behaviour, but our eating behaviour is not caused by this fact, since we invest eating with cultural and social meanings. Here we have overturned a material cause, and in the task of overturning material causes, which I pursue throughout this work, I am led by Merleau-Ponty, Aristotle, Plato and others.⁶ In what follows, there are many cases in which I argue that “X is in virtue of Y,” rather than “Y is because of X.” That is, I argue that X is motivated by Y, rather than Y being caused by X. For example, I claim that we perceive things in depth in virtue of the fact that they present themselves to our grip, as against the

⁵ I will avoid discussion of the “body subject.” One of my interests in this work is to follow Merleau-Ponty and others in getting past a philosophy of consciousness and a philosophy that starts from a distinction between subject and object. In this respect the term “body subject,” while tremendously important, seems inadequate. In what follows, then, I will try and focus on “the perceiver,” “the embodied perceiver,” “the human being” and “the lived body.” In earlier parts of the work, where I engage with traditional positions, I will speak of subject and object, but only in order to get past this distinction.

⁶ Cf., e.g., Aristotle’s distinction between the four causes, and Socrates’s remark in the *Phaedo* (99b) about those who fail to distinguish “the real cause from that without which the cause would not be able to act as a cause.” Also see Hegel’s analysis of causality and the absolute relation in the *Science of Logic*.

claim that things present themselves to our grip because we already perceive them in depth. When I make such claims, I make an effort to mark the difference between motivation and causation by writing “X in virtue Y,” instead of using the word “because.”⁷

In this work, then, I aim to overturn the causal relations posited by traditional accounts of spatial perception. I want to show instead how facts of the physical spatiality of the body motivate meanings within our lived body, within the embodiment that relates us to places and to others with whom we share place. Merleau-Ponty’s theory of perception, in which all perception is a motor-perceptual activity, is crucial to my argument. His theory shows how perception depends on a body schema that shapes our motor-perceptual approach to others and things. In virtue of the body schema, our physical body is shaped as a lived body that moves toward others and things that are anticipated as making sense for us. The body schema thus communicates a sense to the world. I will show how facts of the body motivate a ‘topology’ of the lived body, which is given in the body schema. Such a topology specifies a meaningful web of relations between parts of the lived body, the lived body and place, and the lived body and others. We sense others and things in space through this topology of the lived body, which thus communicates a spatial sense to the others and things that we perceive. Given that we anticipate others and things through a physical body in a human world, facts about this physical body *qua* being in a human world can motivate meanings within the topology of

⁷ Where necessary I will use the formulation “X in virtue of the fact that Y.” I endeavour to limit my use of “because” to descriptions of material causal relations and causal relations conceived within the framework of science. I will also use “because” to describe explanatory and conceptual causal relations, e.g., “We must think X because Y implies it.” Clearly this is not a straightforward endeavour, and my main effort will be to flag motivating relations by using the formulation “in virtue of” to describe these relations.

the lived body. So our sense of space will be shaped by human meanings. Further, I argue that the body schema is a primordial habit of the lived body. This means that the body schema is labile, open to breakdowns, and is continuous with the human meanings that we find in different levels of habit. So the body schema that shapes perception can specify a labile, humanly meaningful topology of the lived body that gives sense to perceived space.

We are with one another in space. This is a basic fact of our existence. Our sense of one another, our sense of being one and an other, is thus a sense that is given through our sense of space. We sense space with our lived bodies. I want to show how our sense of space—spatial perception—is shaped by our embodiment, by the way in which facts about our bodies, our relation to place, and our relation to others are incorporated into and motivate meanings within a topology of a lived body that is in place and is related to others. This will lead to some reflections on the interrelation between spatial perception and our way of being with one another.

* * *

My project, as suggested above, draws heavily on Merleau-Ponty. Of all philosophers in this century, Merleau-Ponty has made the greatest effort to give an account of perception in relation to the body as we experience it, and it is his work that has led me to understand that the spatiality of the body and the spatiality of perception are crucial to our relations with others. I turn to Merleau-Ponty's philosophy, then, because it opens the way to an account of embodied spatial perception and is rich in ideas. More than that, Merleau-Ponty is very much concerned with depth and the body. This is especially apparent in his

later works “Eye and Mind” and *The Visible and the Invisible*. Here, though, I want to pursue an account of depth perception by working on the *Phenomenology of Perception*. Cataldi has shown how the ontology of *The Visible and the Invisible* can open up many understandings of depth in relation to our emotional life.⁸ But as I have noted above, I wish to pursue somewhat narrowly defined problems of spatial perception in order to engage in sharp critical relations with our philosophical and scientific traditions. This task is better realised through a study rooted in the *Phenomenology of Perception*. By focusing on the *Phenomenology* I can also suspend the difficulties and densities of the posthumous and incomplete *The Visible and the Invisible*, which work will nonetheless remain in the background of my project. I will, though, draw on “Eye and Mind.”

There is a tendency in recent work on Merleau-Ponty to be absorbed by *The Visible and the Invisible*, since Merleau-Ponty suggests that it superseded the *Phenomenology* and since it delves into such wild regions. There is also a tendency to divide that work sharply from the *Phenomenology*, or to blend the two. All of these claims would be subject to a deep discussion.⁹ But there is much of great importance remaining in the *Phenomenology* (this will always be true), especially on spatial perception, and it is this work that has captured my undivided attention. I believe that rigorous work on the *Phenomenology* will show how it anticipates some of the insights of *The Visible and the Invisible*, *but in its own terms*. I mean to suggest some of these anticipations in my studies below. My studies will also draw out some important connections between various themes of the *Phenomenology*, particularly the body schema, habit, perception,

⁸ See Cataldi 1993.

and Merleau-Ponty's claims about the way in which the 'geometry' of the world reflects that of the body. These connections will be helpful to the reader of the *Phenomenology*, especially in suggesting crucial relations between part I and part II.

Given that my framing project seeks to undermine traditional scientific accounts of spatial perceptions by focusing on the relation between perception and embodiment, certain works that draw on Merleau-Ponty or phenomenological insights will hinder me rather than help me. Here I should mention Plomer's work on geometry and vision¹⁰, which tries to retrieve Merleau-Ponty's criticisms of Descartes and Berkeley in aid of analytic philosophy, within an epistemologically driven project. On my view, Plomer's account is still freighted with the prejudices of science and does not attend closely enough to Merleau-Ponty's philosophy of embodiment. Heelan¹¹ draws on a wide range of phenomenological and hermeneutical sources in order to offer an account of spatial perception, but his effort, like Plomer's, is shaped by epistemological issues, and is framed within an attempt to give a hermeneutic-historical philosophy of science which would show us how scientific models of space interact with the perceptual world. Here too we get caught in the wave of science and obscure the body and perception. My concern is not epistemological but perceptual—this is an odd division, and we cannot hold on to it, but foregrounding our heritage of epistemological questions (e.g., Is it true? Realism or an idealism? What can we know?) in abstraction from perception institutes categories and posits that tempt us to beg questions when describing perception. I follow

⁹ For a rich and nuanced treatment of some of these issues, see Madison 1981, and the exchange between Madison and Geraets in appendix one of that work.

¹⁰ Plomer 1991.

Merleau-Ponty's thesis of the primacy of perception, and in this case there is no better place to start than in Merleau-Ponty's own work, and in the *Phenomenology of Perception*.

I am not claiming to give an exposition of all and only Merleau-Ponty's account of spatial perception in the *Phenomenology of Perception*. I am starting from the *Phenomenology*, and this means that I will be elucidating concepts from Merleau-Ponty and extending them, both with respect to embodiment and perception in general, and with respect to spatial perception. At the largest scale, this extension is motivated by my framing question about how we are with one another in space. I see this question as combining strands from Hegel, Sartre and Merleau-Ponty, in order to arrive at an account of the 'existential-perceptual' conditions of our relations to others, which account would illuminate the intertwined necessity and contingency of these conditions. In the closer background, this extension is motivated by questions about body and soul that I have learnt from Merleau-Ponty and Aristotle. And at the grain visible in this work, this extension is motivated by specific questions about spatial perception, and my encounter with the data of science and the claims of our tradition. In elaborating an account of embodiment and spatial perception in a phenomenological context, I have found that Casey is my closest guide after Merleau-Ponty, even though Casey's relation to Merleau-Ponty is complicated.¹²

¹¹ Heelan 1983.

¹² Also see Ströker 1987 for an excellent phenomenological study of spatial experience, and for a treatment of the relation between experienced space and mathematical space. Ströker's study, however, is more closely allied with Husserl's phenomenology than Merleau-Ponty's; in this work I focus on Merleau-Ponty's and Casey's studies, because they give a much more detailed treatment of our embodied relation to space around us. Casey's study incorporates some of Ströker's results.

I start my investigations, then, from Merleau-Ponty's *Phenomenology of Perception* and the *Phenomenology* is my central guide throughout. It is in this sense that I advance my work as an essay—a try—on the question of spatial perception and embodiment, in what I trust is the spirit—or better, a spirit—of Merleau-Ponty's *Phenomenology of Perception*.

* * *

The plan of the work is as follows. In chapter one, “The Problem of Depth,” I engage in a study of the problem of depth perception. I take Descartes's and Berkeley's accounts of depth perception as exemplary of and seminal for two traditional and persistent accounts of depth perception (I call these the inferential and intrinsic accounts, respectively). I show how both these accounts give what I call a cue-dimensional model of depth perception, an account in which we are said to use cues given in sensation to recover measures of a spatial dimension that is fixed beyond us. I also show how these accounts and the cue-dimensional model persist in current psychological explanations of spatial perception. My criticism of Descartes's and Berkeley's accounts sets up the problem of depth and spatial perception that the rest of the work is meant to answer. In addition, my study of Descartes and Berkeley contributes to understanding Merleau-Ponty, since Merleau-Ponty takes Descartes and Berkeley as exemplary of traditional accounts of depth and perception; and my study is guided by Merleau-Ponty's analysis of their accounts. In the final part of chapter one, I turn to Merleau-Ponty's analysis of depth perception, in order to show how an account of depth perception must be rooted in our perceptual embodiment; and to show how depth as a perceived dimension is internal to

our embodiment and that its measures are shaped and constituted within our bodily relation to things. My discussion of Merleau-Ponty will also introduce the concept of motivation by explaining what Merleau-Ponty means when he says that “The supposed signs of depth are its motivations.” Chapter one, then, calls for a new account of spatial perception, by way of a study of depth perception.

I begin to develop this new account in chapter two, “The Body Schema, Habit, Perception and Depth.” Crucial to this account is Merleau-Ponty’s theory of the body schema and its relation to perception. In the first section of the chapter, I engage in a study of the phenomena, current results in psychology and Merleau-Ponty, to show that we have a body schema, and to give a conceptual description of it. I then show how the body schema is related to perception such that, according to Merleau-Ponty, “The theory of the body schema is, implicitly, a theory of perception.” Then, starting from binocular vision, I show how we can account for perception of things in depth within such a theory of perception and the body schema, given that we perceive things within a larger place that holds us and things. In the second section of the chapter, I show how the body schema is related to habit. This connection is crucial because it shows that the body schema is labile, developmental and continuous with a world of human meaning. It also lets me suggest how the body schema lets us incorporate place into our body.

In chapter three, “The Topology of the Body and Our Sense of Space in Place,” I conceive webs of relations between parts of the lived body, things, others and places, which webs are given in the body schema and give sense to spatial perception, as topologies of the lived body. I formalise the study of depth perception given in chapter two in terms of such a topology. Then I engage in a study of orientation perception in

weightlessness in order to trace a topology of the lived body that gives sense to orientation. Finally, I make some suggestions about a topology that gives sense to distance perception (that is, perception of depth *qua* belonging to place). Throughout the chapter I show: how such topologies are motivated by facts about the lived body in the world, which facts acquire meaning within the body schema; how the meanings of such topologies can express a perceptual concern for our embodied being in the world; and how such topologies relate us to place.

In the conclusion, I show the consequences of this account for understanding spatial perception and our being with one another in space. I pay particular attention to the issue of development, which enters into the account through the conception of the body schema as a primordial yet developmental habit.

Chapter 1

The Problem of Depth

In this chapter, I expose the general conceptual problems of spatial perception through a study of depth perception. I choose to begin with depth perception since it is a persistent problem in the scientific and philosophical literature, and since depth, abstractly conceived, captures an aspect of spatiality that seems definitive of it: in spatial experience the distinctness of things seems inseparable from their being in depth.

In the first two sections of the chapter, I give critical studies of Descartes's and Berkeley's accounts of depth perception. (In what follows, "depth perception" refers to visual depth perception, unless otherwise specified.) Roughly put, according to Descartes we can infer the depth of objects from the motions that light produces in our eyes and from information about the way that our eyes are directed toward objects. Berkeley attacks Descartes's position and argues that information about depth is intrinsic within the sensations given us, without further reference to anything outside the mind—we merely have to learn how to associate patterns of sensation with experiences of depth. Descartes's account is paradigmatic of what I call an *inferential account* of spatial perception, and Berkeley's is paradigmatic of what I call an *intrinsic account* of spatial perception.¹

¹ Current practice in the sciences is to follow J.J. Gibson in using the name "direct" for the accounts that I call "intrinsic," since spatial meanings are directly available to the perceiver. I call such accounts

Using Descartes and Berkeley as examples, my critical study shows that inferential and intrinsic accounts of spatial perception share a common problem. They both posit an ontology in which the given is perceived as spatial because of its reference to a dimensional structure that is in some sense determinate *external* to our experience. Inferential and intrinsic accounts both posit what I call a “*cue-dimensional*” model of spatial perception—in both accounts what is given in experience serves as a cue that can cause us to recover a determination of a dimension that is external to our experience. To put it another way, the cue leads to a *representation* of a dimension that is *external* to experience. In Merleau-Ponty’s terminology, cue-dimensional models posit a ready-made world behind perception. In Casey’s terminology, cue-dimensional models posit that our perception represents a space that is given in abstraction from what Casey calls being-in-place. Cue-dimensional models thus refer representations of depth to a depth dimension that is not itself present in the order of being to which the perceiver belongs: the presence of the perceiver to a thing in depth is not the presence of one being-in-depth to another; rather this presence is mediated by representations that absent the perceiver from the domain in which things have their being-in-depth. In cue-dimensional models, the perceiver is *conscious* of experiencing an object in depth, insofar as she has ideas of the object, but consciousness as such is not subject to the vicissitudes of being-in-depth.

intrinsic because I think that there are different ways of conceiving the directness of perception within an intrinsic account, and in my understanding direct accounts in the Gibsonian sense are a subspecies of intrinsic accounts. For a synopsis that locates Gibson’s account of spatial perception amidst a variety of other theoretical programs that on my understanding fall under the inferential or intrinsic heading, see Epstein 1995. For an example of a working contrast between direct and inferential accounts, cf., e.g., Wertheim 1994, 293-355. Also see the appendix to this chapter for a discussion of Gibsonian accounts of perception.

A central effort of Merleau-Ponty's *Phenomenology of Perception* is to show that the 'subject' of perception is not the consciousness that I claim is supposed by cue-dimensional models, but an embodied perceiver who is inherently enmeshed in the world and is open to beings in it. With this effort Merleau-Ponty heads toward the elimination of the division between subject and object, the elimination of a 'philosophy of consciousness,' and the elimination of these terms altogether.² Or, as Casey shows, Merleau-Ponty argues that it is misguided from the start to conceive the problem of depth perception as a problem about a dimension of space; it is a problem about a primordial medium of our being in the world, primordial depth.³ So the problem of depth perception requires a different sort of answer than that given by Descartes and Berkeley and those who take up their traditions. My discussion of depth perception sets up the problem for which Merleau-Ponty's effort is an answer, by showing how the claim that the perceiver is a consciousness external to the dimensions that it represents leads to interrelated problems at a conceptual and phenomenal order, in both inferential and intrinsic accounts.

Conceptually, rooting spatial perception in a relation between the perceiver and a dimensional structure external to experience, where this relation is also external to

² There is controversy in the literature as to the degree and manner to which the project of superceding a "philosophy of consciousness" is thematic in Merleau-Ponty's 'early' works. Cf., e.g., Madison 1981, who posits an important transition in Merleau-Ponty's work, and Madison's exchange with Geraets in appendix one of Madison 1981; Mallin (1979), in contrast, treats Merleau-Ponty's work as (rather indifferently) constituting a cohesive ontological project, although Mallin's interpretation of Merleau-Ponty sometimes works through the lens of a 'Husserlian' philosophy of consciousness, even if Mallin wishes to show how Merleau-Ponty moves beyond such a philosophy; Langan (1966) too, implicitly suggests a continuity across Merleau-Ponty works. Also see Kwant 1966.

I would argue that the project of getting beyond a philosophy of consciousness emerges at the heart of Merleau-Ponty's philosophy from *The Structure of Behaviour* on, and that the words that Merleau-Ponty is to use in his 'later' philosophy to capture these nascent concepts (e.g., "flesh") are already embodied in the concepts that we find in the 'early' works. Defending such a claim would require a different work, but in this work I will constantly be taking up the *Phenomenology of Perception* as a resource that leads us beyond a philosophy of consciousness.

experience, leads to circularities in explanation that I call “recovery problems.” Such problems are notorious and persistent in the scientific and philosophical literature.⁴ These conceptual problems have different forms in inferential and intrinsic accounts, so I will take up these problems in the separate criticisms of each account.

Several problems explaining phenomena are consequent on such conceptual problems. If spatial perception connects us to a dimensional structure that is external to experience, it becomes difficult to explain the meaningfulness of our spatial experience, that is, to explain how perceived space appears as linked with our lives and their meaning. This has severe implications when precisely these meanings are needed to lead us out of the circularities of recovery problems. More than that, if recovering dimensions from cues depends on a relationship that is *external* to our experience of things in space, it becomes problematic to explain how we successfully recover dimensions from cues while accounting for errors, illusions, and the general lability of spatial perception, especially in psychological crises, which phenomena all seem to indicate that this relationship is modifiable and at play *internal* to experience. In cue-dimensional models, errors, illusions and so on become an endless series of exceptions that are in themselves meaningless and are to be explained by adding further complications and mechanisms to

³ See Casey 1991a.

⁴ In the scientific literature on depth perception this recovery problem is often referred to as the inverse projection problem. I prefer the term “recovery problem” since this term is not limited to depth perception and it does not suggest that the problem is to be solved by invoking optical notions of projection. For a recent synopsis of various approaches to the inverse projection problem see Epstein 1995, and for a recent handbook on spatial perception that takes up many cases of recovery problems see Epstein and Rogers 1995. For a programmatic challenge within the field of computational vision to the sorts of research programs that lead to recovery problems (though not restricted to depth perception), with a nice set of examples illustrating the sorts of circularities involved, see Patricia Churchland et. al. 1994. For an important philosophical analysis of a cognate recovery problem in colour vision see Thompson 1995; also see Thompson et. al. 1992.

an external relationship that connects cues to dimensions. Problems on this phenomenal order surface repeatedly throughout this work, and since the inferential and intrinsic accounts share such problems explaining the phenomena, in this chapter I defer treatment of them to the third section.

In the third section, I schematise and synthesise my critical treatment of inferential and intrinsic accounts within a study of Merleau-Ponty's critical account of depth perception. My final aim is to show how Merleau-Ponty's phenomenology points to the ontological position required to get past the problems inherent in inferential and intrinsic accounts of depth and spatial perception, and past the problems of cue-dimensional models of spatial perception in general. Briefly, Merleau-Ponty argues that we need a theory of spatial perception that roots spatial perception in a 'new' ontology of embodiment. Such a theory, which I develop in chapters two and three, overcomes the ontology of the cue-dimensional model by showing that the dimensional structure of perceived space is not wholly external to our embodiment, but neither is it wholly internal to our embodiment. Embodiment is neither subject nor object, neither mind nor body, but belongs to a different ontological category, being in the world⁵, in which the aforementioned paired categories are blended. In the theory that I draw out of Merleau-Ponty, we do not recover spatial dimensions from a structure beyond us, but *constitute* the dimensional structure of perceived space—its 'perceptual geometry'—as a 'lived-geometry' that is constrained and determined by the ways in which our embodiment can work to constitute our place as a meaningful world.



Before I begin, I want to say a word about my reasons for using a study of Descartes and Berkeley on depth perception to contextualise the critical project sketched above. Descartes's and Berkeley's accounts are rich and detailed, and they are not only paradigmatic of inferential and intrinsic accounts, but seminal for a continuing and persistent tradition of such accounts in philosophy and science. But there are further reasons for choosing to study them. Merleau-Ponty's treatment of depth perception in *Eye and Mind* focuses on Descartes, and in the *Phenomenology of Perception*, which is the central guide of the present work, Descartes and Berkeley are two of the main representatives of the intellectualist and empiricist positions that Merleau-Ponty criticises. A study of Descartes's *Optics* also plays a significant role in *The Structure of Behaviour*.⁶ While Merleau-Ponty is a master of dialectical exploration of the intellectualist and empiricist positions—to the point where the reader can become lost in Merleau-Ponty's supple variations on behalf of the interlocutor—it is not always clear whether, how or that Merleau-Ponty's claims relate to Descartes's or Berkeley's own positions; nor is it clear how or whether their positions are filtered through the interpretative literature contemporary to Merleau-Ponty. In the broader tradition in which Descartes's and Berkeley's treatments of depth and spatial perception are seminal, their accounts are often ill-treated or stereotyped, especially in scientific accounts. So in aid of the reader of

⁵ For a discussion of this term and my usage of it in the context of Merleau-Ponty's philosophy, against the background of Heideggerian philosophy, see my discussion in chapter two, p 122, and note 5 in that chapter.

⁶ See the section entitled "The Classical Solutions," in chap. 4.

Merleau-Ponty and of philosophical critics of our scientific and philosophical tradition, I want to take up Descartes and Berkeley in some detail.⁷

A remark is warranted here on my relation to Merleau-Ponty on Descartes and Berkeley. I am not engaged in a detailed textual study of Merleau-Ponty with the purpose of seeing how he understood Descartes or Berkeley, or seeing what contemporary sources might have motivated some of his claims about Descartes or Berkeley.⁸ Neither am I trying to take Merleau-Ponty's criticisms of Descartes and Berkeley and directly apply them to the original texts. Rather, guided by important insights from Merleau-Ponty's studies, I want to return to Descartes's and Berkeley's accounts and give a critical exposition, with the dual aim of opening some insights for readers in the traditions mentioned above and criticising these important examples of inferential and intrinsic accounts.

There are still further reasons for turning to Descartes and Berkeley on depth. The general philosophical programs of both philosophers are tightly intertwined and motivated by 'applied' problems, and the 'applied' problem of depth perception was compelling and important for each, especially for Berkeley. In depth we discover that we stand in relation to other beings, and so for each philosopher the study of depth weaves particular epistemological questions with general ontological questions. A critical study

⁷ For another study of Descartes and Berkeley in the context of Merleau-Ponty, see Plomer 1991. Plomer's aim is to retrieve criticisms of classical theories of vision from Merleau-Ponty and thereby introduce Merleau-Ponty as a useful figure to the analytic and scientific tradition that frames Plomer's concerns. My approach is framed by a concern for the ontology of the perceiver, and I would be critical of Plomer's treatment *qua* discussion of Merleau-Ponty's phenomenology, to the extent that her treatment prescind from Merleau-Ponty's overall project of discussing the ontology of the embodied perceiver.

⁸ For a general investigation that sets Merleau-Ponty against his scholarly background, see Geraets 1971.

of their accounts will thus bring ontological questions about the relation between the perceiver and spatial dimensions into sharp focus.

Most of all, Descartes's and Berkeley's struggles to explain depth allow us to see how the difficult problem that is manifest within spatial experience itself compels inferential and intrinsic accounts of spatial perception. Since cue-dimensional models that follow in the tradition of Descartes and Berkeley are just as compelled by the phenomena that they take to be fundamental to spatial experience, their proponents respond to criticisms by fixing more variables, elaborating existing connections between cues and dimensions, or proposing new sorts of connections between cues and dimensions (examples of the latter include neural networks, information invariants, or various sorts of attractors in dynamic systems). It is easier to see the phenomenal source of these compulsions in Descartes and Berkeley, precisely because they attempt to overturn previous traditions and found new ones, and their positions thus form in a close struggle with the phenomena.⁹ To anticipate a point about the compulsion of depth phenomena, both Descartes and Berkeley take the fundamental fact of spatial experience to be that we experience ourselves as being *in* space, and from this it follows that we need a cue-dimensional model to connect our finite location in space with a space that is beyond us. Merleau-Ponty urges us to see that the fundamental fact of spatial experience is that we are *of* space, that, roughly put, spatiality is immanent within our being as embodied

⁹ Descartes's work can be seen as an attempt to overturn the scholastic tradition and its Aristotelian roots, and Berkeley's work can be seen as an attempt to take Descartes's idealising move in another direction—a shift from problematic idealism to dogmatic idealism, in Kantian terminology (see the "Refutation of Idealism" in the *Critique of Pure Reason*).

For an extremely rich philosophical account of depth perception prior to Descartes and Berkeley, which includes some extraordinary discussions of experiments with depth perception, and seriously attends to place, see Ibn Al-Haytham's *Optics*. A discussion of Al-Haytham's *Optics* would be too difficult here,

perceivers—we are not conscious of a space that is external to us *qua* consciousness, but our being is already enmeshed in spatiality. Since cue-dimensional models tend to absorb criticisms and contradictions into further ‘mechanical’ detail, the project of overcoming the cue-dimensional model cannot ultimately rest in a positivistic criticism of its failures. Overcoming the cue-dimensional model means showing that the fundamental fact of spatial experience is that we are *of* space, and there can be no direct empirical proof of this claim. This is not to suggest that the question is a matter of opinion, a simple change in outlook, but that the project of overcoming the cue-dimensional model is ultimately an ontological project, and a phenomenological one, since the question as to whether we are *in* or *of* space is a question about our essential existence as being in the world. Part of my aim in what follows, then, is to chart the tensions inherent in Descartes’s and Berkeley’s philosophical encounters with spatial phenomena and thus show how their confrontations with spatial experience compel them to adopt cue-dimensional models. I will formalise these tensions and the compulsion of the phenomena in a ‘phenomenological portrait’ of Descartes’s and Berkeley’s accounts. We need to be attuned to this compulsion if we are to overcome the cue-dimensional model and see that we are not merely *in* space, but *of* it.

Finally, both Descartes and Berkeley compare the relationship between depth and what is given to us to the relation between things and the words of a language. I use this parallel with language to organise the chapter. I show that in Descartes’s inferential account, depth is encoded in a causal language whose coding must be external to us in an extrinsic optical and neurological ‘geometry’ specified by God. In Berkeley’s intrinsic account, we see in depth because our vision is capable of understanding the visual

because of the technical language that it requires, and it would also take us too far outside of the textual

language of God, which language is both arbitrary and natural; thus the meaning of this language is intrinsic to our vision yet external to us, in God. In both cases, then, the words of the language serve as ‘cues’ to a truth already specified behind the ‘cue,’ the words represent a dimension that is determined in a structure that is beyond our experience. Against such accounts, Merleau-Ponty argues that ‘words’ and things are internal to one another in ‘the language of depth.’ The motor-perceptual activity of our embodiment originally constitutes the spatial meaning of things in depth, within our embodied presence to the thing in depth.

Descartes and the Encoding of Depth

The Conversion of the Visible into Motion and Thought

Descartes responds to the fundamental problem posed by the connections and disconnections manifest in our experience of depth by arguing that our ideas of things are different from what is in things themselves—that is, he deals with the problem by idealising the connecting disconnection between our ideas and things. In the beginning of *The World*, he argues for this idealisation in the case of light, by comparing light to language. Just as words “bear no resemblance to the things they signify,” nature could also have established “some sign which would make us have the sensation of light.”¹⁰ Even if nature in itself contains nothing like light, things in nature can be so organised as to produce signs in us that cause us to have ideas of light that refer back to things *qua*

tradition from which our current scientific and philosophical accounts spring.

¹⁰ *The World*, AT 11:3–4. (*The World* in Cottingham’s edition (Descartes 1985) and Mahoney’s translation (Descartes, 1979); *Le Monde* in Adam and Tannery’s edition (Descartes 1896), hereafter AT.)

luminous. In *The World* as a whole, Descartes specifies how this ‘sign system’ works by showing how a system of determinate, lawful motions can cause ideas in us that correspond to everything that we sense in the world. Ultimately, Descartes describes a “new world” that lies behind our ideas. In itself, this new world is nothing other than continuous uniform matter that is differentiated into things, properties and relations only by its motion, which motion is initiated and partly determined by the immanent activity of God.¹¹ This “new world” of motion will be the object of science for centuries to come.

With his conception of light, Descartes disconnects the world as given in our ideas, through sensations, and the “new world” as it is in itself. By modelling this disconnection on a naturalised version of the relation between words and things, he re-connects ideas and things through a causal system in which light is encoded as motion. Because of the causal connection, vision can traverse the disconnecting gap between thing and idea, and indeed this disconnection is so transparent to our ideas of vision that in everyday experience we take our visual idea of the world to be identical with things in the world, failing to see that the world in itself is the “new world” of motion. This is much the same, according to Descartes, as failing to notice that we are speaking in one language or another, rather than dealing with things directly, in everyday situations where language becomes transparent and unnoticed.¹² This disconnection, which becomes a transparent connection for ideas of vision, will found Descartes’s inferential account of depth. This is because it allows us to have experience of a dimensional structure that is inherently

¹¹ See *The World* Chapter 1, “On the Difference Between our Sensations and the Things That Produce Them”, Chapter 6, “Description of a New World, and on the Qualities of the Matter of Which it is Composed” and Chapter 7, “Laws of Nature.”

¹² See *The World*, AT 11:3-4.

external to us *qua* thinking, yet its causal transparency lets us infer the determinations of the dimensional structure beyond us. In my terminology, this disconnecting connection supports an inferential relation between a cue and the determinate external dimensional structure to which it refers.

The conception of light as motion is thus crucial to my main concern here, which is an analysis of Descartes's account of depth perception in his later work, the *Optics*.¹³ In the beginning of the *Optics*, Descartes declares that he treats light only to explain how its rays enter the eye, and he does this only in order to explain sight. He then posits three "comparisons," that is, models, for light, which are only supposed to facilitate the reader's comprehension of light's behaviour. But these models convert light into motion. The philosophical program articulated in *The World* thus pervades the account of vision in the *Optics* from its roots on up.

The conversion of light into motion is most important in Descartes's very first comparison, which compares light to a blind man's stick. A blind man can discern qualities of an object without the object changing the identity or structure of the stick as medium—no determinations of things as such travel through the stick, the stick just *moves* as a whole within a larger framework. To the blind man, the differences between mud, tree, rock, and so on, can be "nothing other than the various ways of moving the stick or resisting its movements"; the "resistance or movement of the bodies" is "the sole cause of the sensations he has of them." The blind man can 'see' these differences, but he 'sees' them through resistances that "are nothing like the ideas he forms of them [the

¹³ Descartes began work on *The World* in 1629 and abandoned publication plans in 1633 after Galileo was condemned. *Discourse on the Method*, *Optics*, *Meteorology* and *Geometry* were published in 1636, and

bodies].” Likewise we can consider light itself to be a motion whose determinations are nothing like our ideas of colour, light or coloured bodies.¹⁴ If the blind man can ‘see’ using motion, then the sighted man can too, and if the proximate cause of our vision is motion that is not in itself coloured, or lit, or luminous, or otherwise like the visible, then the ideas that we derive from motion would not be at all like the visible properties that are in things themselves.

Descartes’s idealisation of the connection between our ideas and things is not just a positive move that claims that motion is sufficient to convey ideas of the luminous—there is a negative moment too, since Descartes argues that there are no ideas outside of us. Like the stick, the only thing that ‘passes through’ light is motion. There is no internal structure in light itself that ties the motion of one ray of light to another, there is no ‘travelling’ mediator internal to light that carries semblances of visible qualities from the object to the eye. Such an internal structure in light is not necessary, since signs need not “resemble the things they signify,” as is shown by the case of words.¹⁵ And there could not be any such internal structure in light, since light is only motion, and since images and sensations are not ‘out there’ in the world, they are in the ideas of the mind only. By converting light into motion, Descartes eliminates the scholastic’s intentional species “flitting through the air” from thing to mind,¹⁶ and he eliminates any other theory that claims that the visible is a phenomenon that constitutes itself outside of us. Unlike the

the *Meditations* in 1641. See the chronology in de Buzon’s edition (Descartes 1991); cf. the chronology in Cottingham et. al.’s edition.

¹⁴ *Optics*, Discourse I, AT VI: 84- 85. (*Optics* in Cottingham’s edition (Descartes 1985) and Olscamp’s translation (Descartes 1965); *La Dioptrique* in de Buzon’s edition (Descartes 1991).)

¹⁵ *Optics*, Discourse IV, AT VI: 112.

¹⁶ *Optics*, Discourse I, AT VI: 84-85.

obscure apparatus of scholastic doctrine, which is repugnant to Descartes, moving matter is clear and distinct, it can be described mathematically with universally applicable laws, without requiring particular or singular internal principles to secure the identity of different things. God could create the “new world” in Descartes’s mathematical form.¹⁷

On the one hand, this means that we can explain the fact that we experience things as being beyond us in space, without supposing that there are intelligible forms in things themselves that travel to us through space. In effect, the latter supposition would put our mind outside us in things, begging the question that for Descartes is inherent in our experience of depth, namely that we are limited to one locus within space but can perceive things that are not identical with this locus. (Here we must remember that while the Cartesian mind is distinct from the body, it is united with the body and is thus limited to a location, even if this unity is problematic.¹⁸) On the other hand, this means that we must eliminate *all* the intelligibility that could be intrinsic to motions that are external to us, and this augments the disconnection between ourselves and the dimension of which we have experience—the roots of intelligible experience are not to be found outside of mind or ideas.

We see this elimination of intrinsic intelligibility in Descartes’s description of the nerve fibres that mediate between the eyes (which receive the motions of light) and the brain. The behaviour of nerve fibres is precisely homologous to that of light—nerve fibres conduct nothing other than independent motions (fibres do not interfere with one another,

¹⁷ Cf., e.g., Descartes’s argument in Meditation Six of the *Meditations* that anything that he can conceive clearly and distinctly can be created by God.

just as light rays do not interfere with one another). Moreover, Descartes's arguments concerning nerve fibres are essentially the same as those used in the case of light; for example, Descartes again uses a comparison with the blind man to argue that in themselves the fibres do not contain images that are sensible—at most they contain intelligible signs of the sensible.¹⁹

Outside of the mind there are just independent motions, and there is nothing internal to motions that constitutes anything like an image, idea, form, and so on, of the object or its visible qualities. There is no sense in talking about resemblances between, for example, projections on the back of the eye and the visible, for such 'images' have no integrity, identity or internal constitution that would make them into images. Thus "the soul does not need to contemplate any images resembling the things which it perceives."²⁰ It is only through the constitutive work of soul that these independent motions are put together to become ideas of the visible and of the visible's qualities: "it is the soul which sees, and not the eye."²¹

¹⁸ See Casey 1993 for a sustained criticism of the sort of abstraction conception of location that is concomitant with this sort of concept of the unity of body and mind. Also see Merleau-Ponty's discussion of depth in *OE* and in *PdIP*, and especially his discussion of the intellectualist account of orientation in *PdIP*.

¹⁹ See *Optics* Discourse IV and *Treatise on Man* (Descartes 1972), especially the discussion of the uninterrupted movement of fibres at AT XI:144.

²⁰ *Optics*, Discourse V, AT VI: 114. Cf. Merleau-Ponty's *OE*, *EM*, section 3.

²¹ *Optics*, Discourse VI, AT VI: 141. Cf. Descartes's wax experiment in Meditation Two in the *Meditations*, in which soul's judgement is constitutive of the wax's identity.

In the *Treatise on Man*, Descartes suggests that the motions on the "interior surface of the brain," on the pineal gland, do trace an image that is in fact projected on the back of the eye (AT XI: 175). In AT XI: 177 Descartes seems to say that the figures imprinted on the pineal gland are themselves ideas, and that these are subsequently contemplated by the soul. From the point of view of the *Optics*, this would mean that the soul would have to have "yet other eyes" that it would use to contemplate images (cf. the argument at AT VI: 130), which would beg the question.

The Encoding of Depth, and Disconnections in Descartes's Account

Descartes's analysis idealises the disconnecting connection between mind and things, by turning vision into a thought that is caused by a multiplicity of motions.²² But these motions are not in themselves visible, precisely because they are the precondition for visibility.

For just this reason, Descartes's analysis must presuppose an intelligible world of motion that has determinate structures that mediate optical motion to the eyes, nerves and brain. If Descartes's model of light is to explain how objects cause vision, then the seen, the seer, the seer's eye, and so on, must be embedded in a space that has a determinate geometry and optics. If motions in the eye are to provide the soul with determinate signs *of* objects, then there must be an already extant, self-sufficient, determinate and uniform "geometry" of the nerve fibres to connect motion to the eye and the brain. Most important, if objects are the cause of our seeing things and if our ideas of objects are true—if vision is *of* the world—then the motions of the light and nerve fibres, and the soul's decoding of motion in the brain, must already be guaranteed to allow us to both successfully constitute ideas of objects and have these ideas be true to their objects, even if the being of these ideas is nothing like the being of their objects. There must be a guarantee that the encoding that connects ideas to objects is true to the world.

²² Cf. Merleau-Ponty's *OE*, *EM*, section 3.

Descartes seeks this sort of guarantee in the *Meditations*, namely, a guarantee that thought can be thought *of* the world, and that ideas caused in us are non-deceptive in letting us get a true idea of the world. In the *Meditations*, Descartes articulates this guarantee in terms of judgement, and tries to secure it through an argument whose first step necessarily has a reflexive transcendental form, and whose subsequent steps depend on the discovery within thought's content of the idea of a supremely perfect and hence existent God.

In the *Optics*, Descartes does not explicitly seek such a guarantee for sight, but it is clear that it must be presumed, for vision itself cannot guarantee, let alone see, the “new world” behind Descartes's theory of vision. God is really the only one with a comprehensive ‘outside view’ of this “new world” and the perceiver within it. So all of the structures in this “new world”—its space, its motion, and so on—remain ideal to human thought. We can think the “new world,” but we cannot see it. Since Descartes's “new world” is pre-constituted according to some principle that is alien to human being and human experience—namely, according to God's constitutive role in the intelligible system of motion—perception, as constituted by thought's deciphering of motions in the body, is really re-constitutive of its object (and not purely constitutive of its object). Perception is a *recovery* of dimensions and determinations that have their determinacy in a structure external to the experience of the perceiver. Let us see how this leads to what I call a recovery problem in Descartes's account of distance perception.

Descartes's triangulation account²³ of distance perception depends on a point made in his account of the visual perception of position, namely, that the disposition of the parts of the body relative to one another (such as the direction of the eye or head) is registered by motions in the brain. Given knowledge of the disposition of body parts, the soul can know the position of a seen object by locating it on straight lines that "we can imagine to be drawn" by an inferential process that amounts to following the path of light rays back from the eye to the object.²⁴ Distance perception is just a triangulation based on the same operation: given the distance along the baseline between the two eyes, and the angle between the optic axes of the eyes and the baseline (the vergence angle), the soul can know "as if by a natural geometry"—that is, by an inference depending on knowledge of natural geometry—the distance between the object and the baseline. Descartes likens this to a blind man judging the distance between himself and an object given two sticks, knowledge of the distance between his two hands, knowledge of the angles that the sticks make, and so on.²⁵ Descartes even notes that one eye is sufficient for this triangulation, if the eye's position is changed.²⁶

²³ Descartes has two other accounts of depth perception—an account based on the distinctness and intensity of the object and an account based on focus—that are logically equivalent with respect to the issues that I discuss, and are subject to parallel criticisms. For recent reviews of accounts of depth perception, see, e.g., Gillam 1995 and other articles in Epstein and Rogers 1995.

In *Descartes on Seeing: Epistemology and Visual Perception*, Celia Wolf-Devine argues that all three accounts operate mechanically and do not require an intellectual judgement. In this case the accounts, including the triangulation account, would not fall to my criticisms. But my criticisms of Wolf-Devine's claim show why the distinctness and focus accounts would fall to my criticism, and these criticisms would also hold of Wolf-Devine's claim about the triangulation account (see note 25).

²⁴ This backward tracing (inverse projection) is possible because Descartes has shown (Discourse V) that, given the laws of optics and the geometry of the eye and its lens, there is a more or less one to one mapping between points on the back of the eye and points on a picture plane in front of the eye. This one to one mapping is thus another assumption that Descartes has to make about the world.

²⁵ There is a dispute in the literature as to whether the operation in the case of vision actually involves a judgement. I claim that it does, as does Nancy L. Maull (1991). On the basis of Descartes's word choice in the French edition, Wolf-Devine argues that it does not, although she acknowledges that the Replies to

This account of distance perception marks at least two distinguishable circularities in Descartes's argument. The first circularity spins itself out around an epistemological skepticism. If knowing the space in which objects are located (which I call "world-space") depends on seeing distance, but seeing distance in world-space requires an operation of thought that must, as such, be carried out on a space that is only thought (which I call "thought-space") and that is ideally disconnected from world-space, then we must already know that operations in thought-space can yield results true to world-space. But to know this explicitly, we would already need to know the characteristics of world-space that make it match up with thought-space. In order to know world-space, one already has to know world-space.

Descartes cannot get out of this circularity by saying that some sense other than sight provides us with a more fundamental knowledge of world-space—precisely because of the drift of Descartes's program, all senses are just motions that have been booted into the realm of perception by thought, so all senses yield knowledge of distance only

the Sixth Objections support the contrary interpretation (Wolf-Devine 1993, 74-75). Suppose we accept Wolf-Devine's argument, despite Descartes's claim in the *Optics* that it is the soul that sees, not the eyes (AT VI:141). Seeing distance, then, does not require an intellectual judgement, rather our muscles and brain are configured *in advance* by God so as to mechanically produce knowledge of distance in us. But this just means that the causal inference backward from motions to distance is carried out by a causal mechanism instead of the soul. The process that allows us to know distance is still fixed *in advance*, and can be so fixed because of the 'geometry' of the world, light, eyes, nerves, and so on—in this respect Descartes is markedly different from Berkeley. This would still lead to the results that I develop, which could be put in the following way if we were to develop them within Wolf-Devine's interpretation: (1) God is required, external to human experience, to ensure that the geometrical relation embodied by the mechanical judgement mechanism accurately reflects the geometry of the world, and (2) the body and its mechanisms must have a peculiar, ideal doubling, since bodies are both sized objects in the world like any other, yet their mechanical structures are an ideal ground of their function as veridical measurers of the world.

I would also argue that Wolf-Devine's position adds a complication to feasible interpretations of Descartes's account, since we would have to explain how a mechanism can achieve binocular fusion of the image, so as to properly triangulate the eyes, without there being an image available to the mechanism, since on Descartes's argument there is no image external to mind.

Note that Wolf-Devine's claim that Descartes's focus and distinctness accounts of distance perception are mechanical, would also be susceptible of the same sort of criticism.

²⁶ *Optics*, Discourse VI, AT VI: 137-138.

through thought. Knowledge of distance in all cases is the result of a transition from motions determinate within world-space, to thoughts determinate within thought-space. The determinacy of this transition is *external* to both human thought and the world of motions, it is somehow ‘between’ them. Like Archimedes, Descartes would need a standpoint that is out of this world and beyond human intellect if he is to carry off his project and show how we can see the depths of the world, but there is no such standpoint for a human intellect. So Descartes has to presume that thought-space does indeed map onto world-space, but there is no intellectual intuition or idea from sense that could possibly confirm this. The object of such an idea is in itself both beyond the ken and the experiential reach of human being, it transcends us. This idea could only be in God, it is external to us, it is approached only through the reflections of the *Meditations* and only insofar as our ideas of geometry and optics are clear and distinct.

The second circularity is more down to earth but has a similar structure. In order to perceive the distance from the seer to the object in the world, one already has to know other distances in the world that are required for triangulation, namely, the distance between two eyes or the distance between two locations of one eye, as well as the vergence angle of the eyes. I call these distances “grounding distances,” since they ground the triangulation procedure.²⁷ If thought infers the determinacy of depth from signs given it, yet the given signs only have their determinacy in relation to grounding distances, then thought’s inference must be grounded on direct and immediate signs of grounding

²⁷ The angles in question should be taken as distances because they are, logically speaking, nothing other than distances under another aspect, just because there is a determinate relation between angular and linear distance in natural geometry. This determinate relation is captured by the relational structure of a triangle’s measures, and this relational structure is in turn determinative of the mathematical geometry of the space in question. (Cf., e.g., Gray 1979.)

distances. If thought had to infer grounding distances in the same way that it has to infer the distance to the object, then there would be an endless regress.²⁸

Descartes cannot rid himself of this circularity by saying that another sense can provide thought with grounding distances for vision. We could try touching our eyes to measure the baseline between them, but given Descartes's treatment of the senses, tactile distance would equally be the result of an inference that recovers a distance that depends on yet other grounding distances—in this case the relative angular disposition of all the joints in the body and the length of the joints, which length must again be measured, somehow. Instead of getting into these endless and somewhat absurd circles, Descartes tacitly and quite sensibly presumes that we *just know* these grounding distances, because our body, nervous system and mind are so configured as to provide us with this knowledge, and we cannot ask any further questions. The significant point here is that the fundamental structures of body through which alone we know the world must therefore be logically and ideally external to the world of our experience. That is to say, even though we can take the measure of our bodies as things, this measure depends on a prior knowledge of grounding distances, and these grounding distances must be 'known' independently of our knowledge of the world. Consequently, grounding distances are not distances that belong to the world, they do not really belong to the body as a thing. The

²⁸ For suggestions toward a related criticism of an account that I take to be cognate to Descartes's inferential account, see Turvey and Shaw 1979, particularly the section entitled "The Problem of Origin: The Solution from Nativism." The authors mount a criticism of a nativist account (which they take to be equivalent to an evolutionary account) of the origin of the size-distance invariance in depth perception (which invariance will be discussed in more detail below). I take Turvey and Shaw's criticism, although problematic, to be representative of the sort of criticism given by the tradition of ecological psychology and dynamic systems theory. (For other works in this tradition see the works by Gibson, Turvey, Carello, Neisser, and Thelen and Smith, listed in the references, as well as Thompson's critical studies (and also Ullman). More will be said about this tradition below.) Their criticism is directed to scientific positions that Merleau-Ponty would call intellectualist and that I conceive as giving inferential accounts.

body has a peculiar ideality, it has measures that must be external to the metrical space of the perceived world, since the body is the sole ground of our perceiving the world and its measures. But if perception of distance is perception of a distance in the world, if it is a distance inferred by the soul through motions in the world that are conducted through the system of objects, light, body, eyes, refraction, nerve fibres and the brain, then the ideal body must also have a determinate, albeit ideal, relation to the worldly body that can become the object of our perception or of others's perceptions and that can be measured as a thing. The peculiarly ideal body is doubled.

Descartes's ways of avoiding the above circularities, then, oblige him to tacitly posit an already determined ideal body that is disconnected from an already determined world-space, space as it is in itself; and these again are disconnected from thought-space.²⁹ On a methodological and metaphysical level, these disconnections beg the question of the connections between these different spaces, which connections are necessary if we are to perceive things in depth. Within the framework of his larger philosophical project, Descartes's strategy for connecting the different spaces amounts to digging into intellect and being, and retrieving a core of intelligibility and clarity that unites these different spaces in light of God. Briefly, the mathematical intelligibility of the motion that determines optical behaviour and "natural geometry" is in a certain sense the apparent form of the intelligible connection between world-space and thought-space, between being and thinking; the combination of the self-clarifying thought which is the *cogito* and

²⁹ Cf. Maurice Merleau-Ponty, *SdC*, 204-205, *SB*, 190. Merleau-Ponty notes that Descartes's philosophy leads to three orders of events that are external to one another: events of nature, organic events, and those of thought; he links this to his interpretation of images in the *Optics* and the doubling of the body. Also cf. Merleau-Ponty's conception of the ready-made world in the *PdIP*, particularly in the chapter on space.

the idea of God discovered within this thought are the opening through which thought eventually discovers and grounds its intelligible linkage to being.

These spaces, their structure, their content and their connection, therefore, are not in themselves ideal for us (even if they may be ideal in themselves for God). They are only ideal and thinkable when they have been re-constituted *by* human thought and *for* human thought, and they can be re-constituted in this way only because God has already set up the world so that it encodes signs that cause us to decode just the right ideas about the world. The root of the ideality of space is ultimately alien to human thought. Descartes argues that we can have ideas of things other than ourselves, things in depth, because our ideas are disconnected from things in the way that words are disconnected from things meant. But Descartes insists that the connection between 'visual words' and things in depth is mediated by an encoding natural geometry that is concretised in motions. This means that each word in his language of depth depends on a doubling: each word arises in a system of motions that has value both as an ideal measure in a calculative system internal to mind and as a stretch of matter or motion in a natural world that is not itself ideal (for human mind). The encoding connection that bridges this doubling between idea and nature is precisely excluded from our knowing, since it grounds our knowing. To inspect the basis of the encoding language, we would already need to be able to interpret this language, to see things in depth; and we would have to be able to turn this language of depth onto itself, to see how thought-space gibes with world-space. But turning this language of depth onto its encoding mechanism does not break us out of the language of depth, it just gives us further words of the language, not the things themselves. Descartes cannot use the language of depth to get at its own roots any more than he can use a lens to

magnify its own surface, unless he reflects the lens in a mirror—but this requires a pure, ideal reflection external to the causal language of depth, a *cogito* beyond perception. Descartes's encoding language of depth, which naturalises the sign-signified relation in a causal system, depends on an ideality that doubles space and the body, an ideality that can never present itself in perception. So the dimensional structure of space must remain beyond us in an ideal world external to our intellect, and is only recoverable because of a language of depth that is external to us and that is secured by an idea that is beyond us. The language of depth is only intelligible because we happen to have an innate capacity for it.

As we shall see, Berkeley attacks this doubling and its consequences by banishing external geometry and other 'natural' non-mindful terms from his account, thus internalising all significance within the words of his language of depth—but he too will have to naturalise his language of depth. As I will show in section three, the conceptual difficulties, externalities and disconnections that follow from both these accounts make it difficult to explain empirical phenomena of depth perception, which manifest determinate and changing interrelations between physical, psychological and social states, and depth perception. Such determinate relations mean that we are in fact responsible for the "language of depth." The language of depth is not merely natural, since our being and doing to some extent shapes the internal relations between perceiver and world in which our spatial experience is rooted.

Berkeley's Inwardness and the Visual Language of Outness

Philosophical reflection on spatial experience convinces Descartes that in truth there are things deep in a space beyond us, even though our ideas of things and our ideas of depth are nothing like the actual being of things in depth as they stand outside us. Reflecting on the same spatial experience, Berkeley argues that if we want to explain depth perception we cannot connect the meaning and determinacy of spatial experience with anything outside mind, human experience or immediate sensation. Vision comprehends a visual language disconnected from anything external to mind, and the inward structure of this language presents us with "outness" as a meaning. This stands in contrast to Descartes's encoding language, in which the material constitution of exterior signs of depth causes us to have ideas of the depth of things outside of us. In my terminology, Berkeley's account is intrinsic and Descartes's is inferential.

My critical exposition will show that if we humans are ever to understand the visual language of depth posited by Berkeley, the words of the language must ultimately represent structures that are latent within visual language, yet are beyond human mind and immediate sensations, structures that are in fact given because God is the author of visual language. Descartes's and Berkeley's accounts are therefore alike in at least one respect: in both accounts our experience amounts to the experience of signs—'cues'—that represent a depth that is already constituted within a dimensional structure external to human experience. We can experience depth because we are connected to those external structures, but we must also be disconnected from such external structures.

Before I begin my discussion, I need to clarify my textual strategy. Berkeley treats depth perception in a number of different works. The earliest work is *An Essay Towards a New Theory of Vision* (hereafter, *NTV*). The arguments of *NTV* are crucial to the *Treatise Concerning the Principles of Human Knowledge*, which brings to completion ideas set in motion by *NTV*. In the fourth dialogue of *Alciphron*, Berkeley restates his theory of vision, incorporating doctrines worked out in *Principles*. (The first three editions of *Alciphron* also included *NTV* as an appendix.) In his final year, Berkeley published *The Theory of Vision, or Visual Language Vindicated and Explained*. This work replied to objections to Berkeley's visual theory, restated the theory of *NTV* in a synthetic rather than analytic form, and augmented the theory with results from *Principles*.³⁰

Berkeley gives his most detailed account of depth perception in *NTV*, which also gives detailed criticisms of contemporary theories of depth, including Cartesian theories. In terms of raw material, *NTV* is the work best suited to my present endeavour. On the other hand, *NTV* is the least mature of Berkeley's treatments of depth perception. My aim is not to separate out the twists and turns of Berkeley's development as they are plotted across distinct texts, but to follow the internal tensions that the phenomena present to someone of Berkeley's philosophical mien. My exposition of Berkeley's position therefore starts from the *NTV* but is guided and bolstered by Berkeley's later enrichments of his account.

Throughout this section I use the word "idea" in Berkeley's sense. Berkeley uses "idea" to designate both concepts that we have in thought (for example, mathematical or

³⁰ For a description of the publishing history and relations between these works, see Turbayne's commentary in *Works on Vision*.

philosophical ideas) and what might be called “sensations” in current discourse (for example, colours, sounds or smells). Sensations cannot be traced back to any other ideas, and Berkeley often calls them ideas of sense, ideas perceived or immediate ideas.³¹ The latter is the term that I use when referring to “sensations.”

Visual Language and the Inwardness of Depth

In the beginning of the *NTV*, Berkeley makes the famous claim that “distance, of itself and immediately, cannot be seen.” This is because “distance being a line directed endwise to the eye, it projects only one point in the fund [i.e., retina] of the eye, which point remains invariably the same whether the distance be longer or shorter.”³² Distance must therefore be perceived by means of some other idea that is an immediate idea of sense (i.e., a sensation). This hints at two doctrines that fundamentally shape Berkeley’s entire account—that all ideas must originate in ideas immediately perceived, and that distance cannot be immediately perceived.³³ Already this embeds distance and depth within ideas,

³¹ Cf., e.g., *Principles* §1 and *VL* §§9-11. My understanding of the immediacy of ideas is quite different than the one proposed by Schwartz (1994, esp. 10ff). Schwartz gives a positive explanation of immediate ideas, in the sense that his explanation refers to physiological and empirical factors. On my understanding, immediate ideas are better understood in negative terms, that is, they are ideas that are not mediated by other ideas, and given Berkeley’s inward turn, it is best not to refer immediate ideas to any positivity outside of ideas.

³² *NTV*, §2.

³³ Cf. *NTV* §§9-10 and §19. For the purposes of discussion, I take Berkeley’s ‘point on the retina’ argument as successful. This argument has been subject to much criticism in the literature. See Thrane 1977; Gray 1978; Armstrong 1960; and Atherton 1990.

A terminological clarification is warranted here. Atherton argues that Berkeley’s commentators confuse the issue of distance, which is metrical, with the issue of depth, which she takes to be qualitative, and outness, which is the issue of whether things are outside us at all (Atherton 1990, 73-76). She argues that Berkeley’s criticism of the Cartesian account in *NTV* is motivated by the problem of metrical judgements of distance. While distance, depth and outness can and should be distinguished, I would argue that they are interdependent and inseparable phenomena. A critical analysis would therefore show that the support that Atherton offers for her argument is misguided. More, to the extent that she tacitly acknowledges that Berkeley’s criticism of the geometric account of distance perception does not just

and disconnects them from a non-ideal realm. Berkeley's task in *NTV* is to identify the immediate ideas of sense that *do* allow us to see distance, and to describe the connections between these ideas and ideas of distance.

Berkeley divides distance perception into two cases, long range and short range. In long range distance perception, ideas such as the faintness of the target object can tell us the distance between ourselves and the target. But Berkeley claims that only experience can teach us the connection between ideas such as faintness and ideas of distance. Nothing outside mind could cause us to make this connection.³⁴

Likewise, in short range distance perception there is no necessary connection between immediate ideas and ideas of distance. But the argument in this case is played out on quite different grounds. In long range distance perception, there is nothing internal to ideas such as faintness that could establish their connection to ideas of distance. When looking at near objects, however, the connection between distance and determinations of the eyes such as their vergence angle seems to be a causal connection explained by the laws of optics, geometry, and so on, that is, by laws external to experience. As we have seen, this is Descartes's doctrine.

In *NTV*, Berkeley begins to make his case against this doctrine through several empirical criticisms of Cartesian accounts. Against the Cartesian triangulation account,

institute a new quantitative perceptual apparatus, but an essentially different, non-geometrical account of perception, Atherton herself cannot separate depth, distance and outness.

See also Falkenstein (1994), and Gray (1978), who point out that in *NTV* §112 Berkeley uses "distance" to mean the number of points between two other points, and not just the distance outward from the observer as Armstrong suggests (1960). But Falkenstein and Gray show that despite this usage in *NTV* §112, distance in Armstrong's sense is Berkeley's main preoccupation. Note that Armstrong argues that "distance" covers what Atherton would call "distance" and "depth."

In my discussion of Berkeley, then, I intend "depth" (a qualitative determination of 'outness') to include "distance" (a quantitative determination of 'outness'), and "distance" to mean the distance between ourselves and objects, not the distance between objects.

Berkeley argues that we have no immediate experience of the vergence angle of the eyes.³⁵ Similarly, we are not conscious of computing distance through a triangulation procedure.³⁶ So the triangulation account does not accurately reflect our experience of distance perception. My criticism of Descartes's account showed that even if we could know the distances that ground triangulation, these distances would have to be ideal with respect to us, and likewise the geometry and calculation that let us judge the distance. Berkeley fences off this criticism entirely by confining his explanation all and only to experience—no ideal posits external to mind can figure in his account. But precisely because this fencing off depends on facts, it is not fatal—in principle it is possible for us to discover some *other* immediate idea that is necessarily connected to distance, or for us to conduct operations on ideas without knowing that we are conducting them.³⁷ Berkeley, however, takes his factual criticisms a step further and joins them with the concept of a signifying connection in order to reform Cartesian accounts.

Let me explain signifying connections. Using the example of the redness of a blush on the face of a man who is ashamed, Berkeley argues that we cannot immediately

³⁴ Cf. *NTV* §3.

³⁵ Cf. *NTV* §§3-5, 12-15.

Although Berkeley does not name Descartes in the body of his text, the triangulation argument that he explicates is essentially the same as Descartes's, and in §42 he discusses the example of the blind man performing a triangulation with two sticks. An excerpt from Discourse VI of Descartes's *Optics*, including the triangulation account of distance, was published as an appendix to the second edition of *NTV*. A footnote in Berkeley's fourth and last edition (1732) refers the reader to "Descartes and others." (See Turbayne's edition in *Works on Vision*.) So it is quite reasonable to take Berkeley's criticism as directed against Cartesian accounts.

³⁶ Cf. *NTV* §12 and §19.

³⁷ Berkeley's doctrine in *A Treatise Concerning the Principles of Human Knowledge* (hereafter *Principles*) would seem to rule out the latter possibility. Cf. Maull's (1991) claim that Berkeley's criticisms miss the mark, since Descartes never claimed that we explicitly know the angles and calculations involved, and that Berkeley's real contribution is in his criticism of the geometrical basis of Descartes's account.

perceive that the man is ashamed. Redness in the face is not identical to shame—redness could also signify anger or a disease.³⁸ There is no necessary connection between the two such that we could infer shame from the idea of redness itself without reference to our experience. Even so, this particular way of turning red in fact always accompanies shame. So once we have learnt this connection from experience, “no sooner shall he behold that color to arise in the face of another but it brings into his mind the idea of that passion which has been observed to accompany it.”³⁹ Strong connections between ideas can be based on a signification taught by experience, yet the connections need not be necessary. I call such connections signifying connections, and the idea that signifies another idea (for example, the redness), a signifying idea.

We are now prepared to follow the Bishop’s reform of the Cartesian account. Berkeley replaces the immediate idea of the vergence angle, which we do not in fact experience, with “the sensation arising from the turn of the eyes,” which is “immediately perceived.”⁴⁰ In the Cartesian account, the vergence angle is a measure embedded within a geometry, so the angle necessarily connects to the distance of the object. But once Berkeley claims that the idea of distance is mediated by experience of distance, in association with the immediate idea of the turn of the eyes, we can no longer claim that distance is *inferred* by a calculation whose determinacy is established *a priori*. The turn

Atherton (1990) makes the same point. Wolf-Devine’s (1993) interpretation of Descartes’s triangulation account would support Maull and Atherton.

³⁸ My thanks to H.S. Harris for pointing out the significance of this point.

³⁹ See *NTV* §23 and §25.

⁴⁰ Cf. *NTV* §§16–18.

of the eyes is just an immediate sensation that has no internal connection to any other idea, so the connection between it and distance *must* be a signifying connection.

In a discussion of another Cartesian account, one that claims that at close range distance is inversely proportional to the divergence of light rays entering one pupil, Berkeley gives a cognate criticism: we experience neither the divergence of light rays nor a calculation based on this divergence. His reform is also cognate: what we do experience is a blurredness (confusion) correlate with divergence, yet there is no necessary internal connection between blurredness and distance. But Berkeley adds a bit more. When we look at objects through concave mirrors or bi-convex lenses the inverse proportionality between *divergence* and the *apparent* distance of the object does not necessarily hold, whereas an inverse proportion between *blurredness* and the *apparent* distance does hold. However, in the case of looking through concave mirrors or bi-convex lenses, the usual relation between *blurredness* and the *actual* distance of the object can be reversed—things can look blurrier when they are actually moved away from us, even if they appear to be looming toward us. Berkeley likens this change in the actual meaning of the blurredness of the object to encountering a foreigner “who uses the same words with the English, but in a direct contrary signification.”⁴¹ Signifying connections, unlike inferential connections, can accommodate this reversal of meaning.

The above criticisms, though, are still empirical. A critic could argue that while nothing internal to the idea of the turn of the eyes connects it to distance, this idea is just another name for the vergence angle of the eyes, and likewise blurredness is just another

⁴¹ *NTV* §32, cf. §§28-39 for Berkeley’s discussion of the problem of distance perception through lenses, etc., which was posed by Dr. Barrow. Note that an “eye strain” account runs parallel to the

name for divergence. So really there are necessary connections here, and one only need take account of the optical situation of the eye in order to re-establish these necessary connections, even when the eye is looking through lenses. Or, the critic could say that if our eyes did not turn a certain way *because* a certain vergence angle is required if they are to point toward the object, then the turn of the eyes could tell us nothing about distance. If Berkeley denies this causal relation he will get into a circle, says the critic: if our eyes somehow signify the distance of the object on their own, then Berkeley will not be able to tell us what distance is in the first place, such that it can be connected with the turn of the eyes—distance would have to be intrinsic within our ideas in some way, rather than being ‘out there,’ which is absurd. But Berkeley’s argument, as we shall see, precisely leads him to claim that distance is intrinsic within our ideas.

An empirical, positive argument, however critical, cannot secure Berkeley’s claim that no system of external or necessary connections suffices to explain our experience of distance. For Berkeley, it is ultimately repugnant and impossible that any immediate idea on its own could cause us to experience things as outer. We can sometimes experience vision as presenting us with a flattened experience (as the painter seemingly does). Nothing in immediate ideas and nothing outside mind could *cause* these ideas to be outer, they are just ideas—we add outness. Presumably this is the sort of experiential phenomena that ultimately lies behind Berkeley’s ‘point in the fund of the eye argument.’⁴² But the critic of Berkeley can always add empirical detail, positing further

“blurredness/confusion” account; basically, we feel eye strain when we try to resolve blurred images, and this strain can be connected with the distance of the object.

⁴² Cf. Thrane (1977) for a distinction between three versions of this argument; the claim made here would draw on the phenomenological version. With respect to the painter, note that many critics have pointed out that it is quite difficult to learn to see in ‘two dimensions,’ as the painter is supposed to. The

layers behind experience, in order to rebuild necessary connections rooted in structures external to mind, which necessary connections can re-establish Cartesian accounts or show that “outness” is caused in us. Here we come to a problem with the method of the *NTV*. To head off his fact minded critic, Berkeley needs to make a metaphysical argument that disconnects experience from external structures once and for all. He must claim that there is no distance or depth on its own outside our idea of it, and that our ideas are not caused by anything external to mind. This is the crux of the difference between Descartes and Berkeley. If Descartes eradicates meaningful forms from the outside world, yet still lets them be caused within us in a determinate fashion through structures determined by God, Berkeley interiorises these forms within mind’s experience and removes their outer reference and external causal basis. Berkeley’s study of distance in the *NTV* therefore demands and anticipates the sort of metaphysical position articulated in *A Treatise Concerning the Principles of Human Knowledge* (hereafter *Principles*). It also nicely illustrates the inherent tension of empiricism: positive empirical claims cannot suffice to defend empiricism as a philosophical position, so empiricism always conceals a certain idealism, a negative moment, at its core.

Let me therefore make good on the argument of the *NTV* by appealing to a doctrine established in the later *Principles*, namely, that there can be no necessary connections between any ideas. Berkeley argues for his doctrine in the following way. When we attend to our ideas, we find no power or activity within them. As passive, an idea has no power to cause itself or any other idea to exist, and ideas thus have no power to cause

more profound criticism is given in Collingwood’s *Principles of Art*, 144-151, and Merleau-Ponty’s *OE*, namely that to conceive painting as a collapse of three dimensions into two is to engage in a bad ontology of painting, and what we must understand is that the painter paints with her body, which is intrinsically a being

themselves or cause their connections to other ideas. Instead, each idea is caused to be and is connected to other ideas by a cause or power outside it. Berkeley calls the outside cause “mind” or “spirit.”⁴³ The method used to establish this doctrine is not at all like the empirical method used in the arguments above. If we are in sympathy with Berkeley we could say that this new method is ‘meta-empirical.’ If we are critical of him we could say that the method is metaphysical or idealistic, since it makes a universal claim about all possible experience on the basis of some experiences—in other words, it makes a claim that extends beyond the scope of actual experience, which already suggests that Berkeley’s philosophy is contingent upon meanings not directly available in immediate ideas of sense *qua* singular.

In any case, if we accept this doctrine, there cannot be any internal or necessary connections between ideas. Moreover, the human mind does not experience itself as establishing the configuration and sequence of immediate ideas of sense. Instead, it apprehends that certain ideas always accompany one another, just as shame always accompanies blushing. Mind thus learns the signifying connections between ideas in the same way that mind learns a new *language*. We have already seen one case in which Berkeley explicitly compares vision to language, and it is not difficult to find other instances in which this comparison is explicit, thematic and central. In the *Theory of Vision or Visual Language Vindicated and Explained* (hereafter *VL*), which is written after *Principles*, Berkeley puts the doctrine of the *Principles* in the following way: “Ideas, which are observed to be connected together are vulgarly considered under the relation of

of depth. For Merleau-Ponty, this ontological analysis of painting shows that depth perception as well is truly an activity of body *qua* being of depth.

cause and effect, whereas, in strict and philosophic truth, they are only related as sign to the thing signified.”⁴⁴ Language, then, replaces causality and necessity. Berkeley begins his argument in *VL* by writing that: “I shall therefore now begin with that conclusion, that *vision is the language of the Author of nature*, from thence deducing theorems and solutions of phenomena, and explaining the nature of visible things, and the visive faculty.”⁴⁵ Descartes disconnects the being of ideas from the being of things while retaining an encoding causal connection between things and ideas—connections are made outside mind. Berkeley internalises ideas of visual distance and depth within mind, and the connections between ideas are thus not external to mind but internal to mind, and their significance stems from experience, not causality. Ideas of distance are not caused within us because of a natural geometry, but we learn that certain immediate ideas signify the idea of distance. As Berkeley puts it at the end of the *NTV*:

Upon the whole, I think we may fairly conclude, that the proper objects of vision constitute a universal language of the Author of nature, whereby we are instructed how to regulate our actions, in order to attain those things that are necessary to the preservation and well-being of our bodies, as also to avoid whatever may be hurtful and destructive of them. It is by their information that we are principally guided in all the transactions and concerns of life. And the manner wherein they signify, and mark unto us the objects which are at a distance, is the same with that of languages and signs of human appointment, which do not suggest the things signified, by any likeness or identity of nature, but only by an habitual connexion, that experience has made us to observe between them. (*NTV*, §147)

It will turn out, however, that this reliance on the Author of nature rests on connections between ideas in a structure external to individual human minds.

⁴³ Cf. *Principles*, §§24-26, §8

⁴⁴ *VL*, §13. (*VL* is in *Works on Vision*.) See Turbayne’s introduction to *Works on Vision* for a detailed discussion of the role of the concept or metaphor of language in Berkeley’s discussion of vision. Schwartz (1994, 10 ff.) suggests that Descartes and Berkeley use the metaphor of language for the same purpose, but as I contend, the structure of language is quite different in their accounts.

⁴⁵ *VL* §38, Berkeley’s italics. Cf. *NTV* §147.

The Problem of Outness

Berkeley's general approach leads to a number of problems.

The first problem concerns the ideas that let us see distance. Above, I discussed the turn of the eyes and the blurredness of the image. These signifying ideas must stem from immediate ideas of sense and must not make reference to objects in depth—a signifying idea must be *prior* to the mediate idea of the distance that it signifies. But the turn of the eyes is really “the turn of the eyes *toward* the object” and confusion is really “confusion *of* the image *of* the object.” The turn of the eyes and the confusion of the image are in this sense *posterior* to the idea of the distant object, and signifying ideas are thus mediated by the idea that they signify. If we are to see blurredness, for example, our eyes must latch onto an object outside us that has sharp boundaries. But it is not clear how we can distinguish between blurredness due to distance, the medium, or the object itself (for example, when looking through a foggy window or at a blurry photograph), unless our vision is mediated by an idea of the distant object.⁴⁶

There seems to be a circle here. Berkeley's account, though, is very effective at dealing with this circularity, because we are not to bother asking *why* or *how* a signifying idea signifies an idea of distance. The fact *that* a signifying idea does accompany an idea of distance is sufficient to establish the signifying connection. In the end, experience is to sort out this distinction, and in the first instance we do not have to know it.⁴⁷ The problem

⁴⁶ See Gerhard Richter's 'photo-realistic' paintings for artworks that are deliberately 'out of focus' and have a peculiar perceptual presence that seems to refuse unambiguous solidity and distance.

⁴⁷ See Turvey and Shaw 1979, particularly the section entitled “The Problem of Origin: The Solution from Empiricism” for a related criticism. (See note 28 for some comments on how Turvey and Shaw relate to Descartes's intrinsic account; these comments would also hold with respect to Berkeley's inferential

posed above is a version of a recovery problem: how do we recover distance from signs if the proper interpretation of signs depends on knowledge of distance? Berkeley's response to the problem is to say that it is badly put: distance perception does not recover distance from the outside through signs whose determinacy depends upon and refers to distant objects, since ideas can only be caused by mind; distance perception is thus a matter of learning significant associations that are *intrinsic* within the patterns of immediate ideas, without referring the determinacy of these ideas to anything outside of ideas themselves.

The moment of idealism which makes all connections between ideas a matter of fact thus dissolves certain empirical criticisms. But the very doctrine that gives this idealism its power—the doctrine that ideas cannot cause their connection to other ideas—leads to a problem with respect to distance. If we cannot experience distance directly by sight, we must experience it in some other way. But if no one immediate idea can on its own connect to another idea, how do we experience distance, which in its *very nature* would seem to be a *relation* between ideas?

In the *NTV*, Berkeley claims that visual ideas that signify distance signify what we can *anticipate touching* after having moved our bodies “a certain distance, to be measured by the motion of [our] body, which is perceivable by touch.”⁴⁸ It is true that we *think* that we see things at a distance, but “ideas of space, outness and things placed at a distance are not, strictly speaking, the object of sight; they are not otherwise perceived by

account.) Also see Churchland et. al. (1994), for particular examples of cognate circularities in the computational analysis of vision.

It is not clear to me how experience would actually sort itself out for Berkeley, unless we suppose: (1) that one sense—which in Berkeley's case would be touch—is more immediately in contact with its object than other senses; and (2) that there is no difficulty transferring properties determined in this sensorium to another sensorium. But claim (2) is precisely problematised by Berkeley's doctrine in the *Principles*, and claim (1) becomes problematic (as we shall see) when we ask how it is that we learn to perceive tangible distance.

the eye than by the ear.” We do not say that we hear distance, but that hearing suggests to us the distance of a thing; likewise, we should not say that we see distance.⁴⁹ Thus, “ideas of space, outness and things placed at a distance are not, strictly speaking, the object of sight”—ideas of space are *signified* by objects of sight.⁵⁰ But it is evident that Berkeley really means that objects of sight signify anticipated tangible distance. So we must ask whether ideas of space, outness and things at a distance can be the object of the sense of touch, for if they cannot be, then we would have to defer explanation once again.

In the *NTV*, tangible distance has a special privilege—it can be constituted without mind. In *NTV* §45, Berkeley says that by a tangible idea he means an immediate object of sense, and above we have seen that it can be “measured by the motion of [our] body.” Berkeley also writes that for a blind man who is later made to see, “all those things which, in respect of each other, would by him be thought higher or lower must be such as were conceived to exist without his mind, in the ambient space.”⁵¹ In *NTV*, then, Berkeley would seem to conceive tangible distance as a measure of a domain that exists outside mind.

⁴⁸ *NTV* §45.

⁴⁹ *NTV* §46. Cf. Berkeley’s comments about hearing in *NTV* §45 and §47. To explain why we do not easily mix up the tangible distances and the audible, but we do easily mix up the tangible distances and the visible, Berkeley appeals to the linguistic model for visual depth perception. Just as language becomes transparent to us when we are familiar with it, the visual language of depth becomes transparent too, and we forget that seeing an object at a distance really means anticipating a future tangible experience—and the visual language of depth is far more transparent than the audible language of depth. (*NTV* §51. Cf. *VL* §48, and *Alciphron*, Fourth dialogue, end of §11 and §12 in Turbayne’s edition. Also compare Descartes’s point that we do not notice the inferential structure of depth perception because this structure, like everyday language becomes transparent to us (discussed on page 27 ff. above).)

⁵⁰ *NTV* §46.

⁵¹ *NTV* §94.

In the *Principles*, however, Berkeley suggests that tangible distance too is nothing without mind. In a reply to objections by those who claim that there are things that exist outside the mind, Berkeley reiterates the *NTV*'s doctrine that outness is not the object of sight, and just after that he claims that it was a "vulgar" but pragmatic error on his part in the *NTV* to suggest that tangibles exist without mind. We do not touch distance, but our experience of touch signifies the further touching that we can anticipate, and ***this anticipatory structure is all that we mean by distance***. Berkeley, I believe, would have to say: it may be that I have an immediate experience of the stretch of my arm, but this in itself could not be an idea of distance, just as the turn of the eyes is not immediately an idea of distance—the stretch of the arm itself signifies what I can anticipate touching by moving my arm, it signifies relationships between tangibles felt by my hand. ***Distance is thus an object of the mind, not sense***, precisely because distance is anticipatory. The connection and disconnection between myself and my object, which is at the core of distance, is not rooted in external mediating structures that separate my being from that of my object, yet connect me to it causally, as in Descartes's account. Instead, according to Berkeley, distance is all and only an anticipatory—that is, ***temporal***—connection that can only be held within mind, a connection and disconnection between the ideas given in visual language, and thus distance depends on our ability to learn the signifying connections of this language. Distance, we could say, is given by a ***power*** of mind, it is not a structure outside of us that is conveyed to mind by an external causality. To deny that distance is given by a power of the mind is to assert that it is the object of some sense, which is to say that it is immediate, but this would mean that a relation between two ideas is immediately given, since distance is just a relation between distinct ideas.

But this would mean that ideas can power their own relations, *contra* Berkeley's doctrine. So the anticipatory power of mind is necessarily at work within distance.

This means that we must have the power to organise immediate ideas of sense into a structure, such that certain ideas go together in anticipating others. But this organisation of immediate ideas cannot depend on mediate ideas of distance, since it is precisely supposed to explain the experiential origin of mediate ideas of distance. At some point we must be given immediate ideas independent of other ideas, which nonetheless lead to ideas of distance. Mind learns that certain ideas signify other ideas only because these ideas always accompany one another, and not because of some internal connection that becomes available upon inspection of the immediate idea. At some point, then, mind must have the power to make a spontaneous shift from having a disconnected experience of independent, immediate ideas, to having an idea of a connection between them. The problem, then, is how connections between immediate ideas are originally formed. More precisely, the problem is how, without relying on ideas that in fact seem to follow from such connections, such connections get put together for the first time as *relevant, meaningful connections* that make future experience comprehensible and regular.⁵² I call

⁵² Here, for the purposes of brevity, I conflate two questions: one is how immediate ideas of one sense connect together to form a mediate idea within the same sensory domain, for example, how we have the idea that a visible object is confused or united in a figure; the other is how ideas of one sense get connected to ideas of another sense, for example, how a blurry figure signifies a tangible distance.

Concerning these questions, it becomes an issue whether Berkeley is an 'intuitionist' or a 'constructivist' with respect to all aspects of vision, or with respect to three dimensional vision only, and not two dimensional vision. See Falkenstein (1994) for a review of some of the issues, and an argument that ultimately claims that Berkeley is an 'intuitionist' with respect to two dimensional vision, even if this is not unambiguous and there is evidence for the other side.

In the context of Berkeley's works on vision, the question as to whether two dimensional structures (lines, planes, figures, etc.) are immediately given in vision without 'construction' by the mind is entwined with interpretation of Berkeley on *minima visibilia*. Gray (1978) focuses on *minima visibilia* as does Falkenstein's article, and both are worthy of criticism. I see nothing incompatible with holding that there are minimum visibles and that height and breadth are given by 'counting' minimum visibles, while at the same time holding that a 'construction' on minimum visibles is necessary to give apparent line and figure. More

such connections regular connections. We must already be able to discover regular connections between ideas if we are to learn the signifying connections that will let us “regulate our actions, in order to attain those things that are necessary to the preservation and well-being of our bodies,” which is what visual language is supposed to let us do.⁵³

In *Alciphron*, in a discussion of the infamous man born blind who is made to see, Berkeley takes up a more limited case of a first encounter with the world of experience. Berkeley likens this to a person encountering English for the first time.⁵⁴ In such cases humans have the power to learn visual language or English through repetition, because the subject already has ideas of the signifieds and there is some other resource (a language speaker or a regular repeated experience) that can aid the subject in connecting the new signifiers (the English words, the objects of sight) with the old signifieds (men and trees referred to by speech, or felt by touch). The resource extends experience into a new language by taking advantage of regular connections between ideas *already available* to

important, it is central to Berkeley's doctrine that minimum visibles are immediate, but depth is mediate, so even if we grant that apparent line and figure are intuited (i.e., that there is an inherent order that mediates immediate minimum visibles in an array, which already seems to be a contradiction), this does not mean that what appears to be a line signifies a line. There is nothing in immediate ideas that could determine whether two adjacent minimum visibles signify two distant objects, or a short linear object in the ‘picture plane,’ or two different points close up, and so on. Since minimum visibles are precisely immediate, there is nothing intrinsic to them that can indicate whether they belong together in a figure, unless we presume that all minimum visibles conform precisely to points on a single picture plane in front of us, which we cannot, which is precisely why distance—the possibility of things being in more than one plane—is an issue for us. There is no sense in which immediate experience of minimum visibles is unambiguously two or three dimensional and there is no sense in which minimum visibles unambiguously form figures. In “The Spaces of Berkeley's World,” Thrane (1982) claims that Berkeley's visual space corresponds to neither a normal two or three dimensional Euclidean manifold but is more like Mach's meta-geometrical space, which backs up this point. Schwartz (1994, 28-32) makes a similar point. It may be true, as Falkenstein argues, that Berkeley could define a line as the shortest distance between two points (page 70), but this would be a line in thought—not every experienced set of minimum visibles that conforms to this definition therefore immediately signifies the experience of a line. We already have to know distance to know the significance of the points, which is why, for example, the interrelation between size and distance is tricky.

My exposition, however, does not hinge on the success of the argument that Berkeley is a ‘constructivist’ when it comes to two dimensional space, since the issue of distance ends up being temporal for Berkeley, and he cannot be an ‘intuitionist’ about associations whose significance builds over time.

⁵³ *NTV* §147.

the subject. But I want to take seriously Berkeley's claim that ideas and connections between ideas come from experience. There must be some point at which we individually have no experience of connections between immediate ideas. To extend Berkeley's thought experiment about the blind man made to see, in Berkeley's context we are all at first blind to every dimension of experience and are just presented with a mass of immediate ideas that have no order. It looks as if there is no element within this unconnected mass of immediate ideas that could seed the formation of a network of regular connections. Just as Descartes removes meaningful form as such from the world outside mind, so that form must be *judged* by the mind, Berkeley removes meaningful form from immediate experience and makes it a *result constituted* by the mind's power of forming signifying connections. But what can give experience a meaningful form in the first place, prior to the mind's experience, such that the mind's power is not misguided? This is the true form of the recovery problem within Berkeley's account—the problem is not how to recover true representations of things determined external to mind (cf. the discussion on page 53 above), but how to recover the meaning intrinsic within the ideas given to human mind.

The power of the human mind will not suffice to break human mind out of the circle drawn by this recovery problem. Prior to experience, the human mind has no way of discerning regular connections between immediate ideas, and since ideas have no internal connection to one another, mind can only form connections between ideas on the basis of past experience. Without prior experience, the human mind has no ground for choosing one particular connection between co-present ideas as being more or less significant or

⁵⁴ *Alciphron* (in *Works on Vision*), Fourth Dialogue, §11.

regular than any other connection, unless it has an built-in disposition to connect ideas in some particular non-arbitrary fashion. But the latter would imply that the human mind has innate ideas that do not originate in sense, which would contradict Berkeley's doctrines. So the ability to form regular connections must depend on an active cause other than the human mind. But according to Berkeley's doctrine in the *Principles*, there is no independently subsisting matter that can act in this way, and the cause of such connections could only be another *mind or spirit*.

In fact, for Berkeley it is the activity of a mind other than the human mind, namely the activity of God's mind, that gives immediate ideas an internal organisation, at least in the case of vision, to which I restrict myself in what follows. God's active role in immediate ideas takes the form of *God's authorship of the visual language of nature*. We have already seen that the immediate ideas of sight constitute a universal language of the Author of nature. In *Alciphron*, Alciphron pursues the question of the origin of what I call regular connections of ideas by asking: "Besides, if vision be only a language speaking to the eyes, it may be asked, when did men learn this language?," and moreover, "will any man say he has spent time or been at pains to learn this language of vision?" Euphranor's answer invokes God's language:

If we have been all practising this language, ever since our first entrance into the world: if the Author of nature constantly speaks to the eyes of all mankind, even in their earliest infancy, whenever the eyes are open in the light, whether alone or in company: it doth not seem to me at all strange, that men should not be aware they had ever learned a language, begun so early, and practised so constantly as this of vision. (*Alciphron* (in *Works on Vision*), Fourth Dialogue, §11)

Our visual experience is ordered as a language by the Author of nature, by a mind other than our own; and it has been ordered by this mind ever since our first entrance into the

world, which is why we are not aware of the external support that God provides for this ordering.

Berkeley's invocation of God's visual language suggests how our visual experience can be organised from within. But this still does not explain how the first signifier encountered becomes comprehensible if we do not already know what the signifier signifies or even that it is significant. In the end, Berkeley must say that the signifiers of the visual language of the Author of nature show their own significance and thus point to their own coherence as a regularly connected set of immediate ideas. This is suggested by Berkeley's claim that visual language awakens the mind and deserves its utmost attention because it is learned with little pains, expresses the differences between things clearly and aptly, and "instructs with such facility, and dispatch, by one glance of the eye conveying a greater variety of advices, and a more distinct knowledge of things, than could be got by a discourse of several hours."⁵⁵ In a human language new words have to be explained to us, and we engage in long discourses concerning the meaning of words that we already know, but there is something immediately self-evident about God's visual language. Its meaning can be revealed in a glance. Moreover, God's visual language is fixed and immutable, which is why the idea of a visible square always suggests and connects with the same tangible figure "in Europe as it does in America."⁵⁶

God's visual language, then, unlike human language, has a self-evidence to it, a possibility of explicating itself. I would argue that it is only because visual language has this self-explicability and is immutable and always present that we can both learn about

⁵⁵ *Alciphron*, Fourth Dialogue, §15.

the significance of ideas of sight from within experience, and have the power to build correlations between sight and the other senses. It is because the intrinsic meaning of immediate ideas is self-evident that we can recover the meaning of these ideas. But it is crucial to note that for Berkeley this does not mean that the signifiers immediately contain within themselves their signified—immediate ideas on their own, without the operation of mind, do not manifest the meaning of mediate ideas such as those of distance. God’s visual language is still a language, with a *conventional* relation between the sign and the signified. The significance of immediate ideas cannot rest in things themselves, in a non-arbitrary causal structure, as in the case of Descartes’s natural geometry—if this were the case, then external subsistent matter would cause the meaning of things, subverting Berkeley’s entire project. The significance of things rests in the convention of the language that is formed by immediate ideas. Yet Berkeley argues that the convention of God’s language is *arbitrary* and *natural*:

A great number of arbitrary signs, various and apposite, do constitute a language. If such arbitrary connection be instituted by men, it is an artificial language; if by the Author of nature, it is a natural language. Infinitely various are the modifications of light and sound, whence they are each capable of supplying an endless variety of signs and, accordingly, have been each employed to form languages; the one by the arbitrary appointment of mankind, the other by that of God himself. A connection established by the Author of nature, in the ordinary course of things, may surely be called natural, as that made by men will be called artificial. And yet this does not hinder but the one may be as arbitrary as the other. (VL §40)

This tension between *nature* and *arbitrariness* is the ultimate contradiction beating at the heart of Berkeley’s account. To avoid skepticism Berkeley severs all necessary connections between ideas and all causal connections between mind and anything other than mind. Descartes’s initial skepticism is articulated and overcome with respect to his “new world” of moving matter—our ideas are truly *about* the “new world” because of its

⁵⁶ NTV §152.

natural causal structure, even if the being of our ideas is nothing like the being of this world. But because there is a difference between ideas and their object, there is a possibility of error, except that God has encoded the relation between matter and our ideas through the causal system of the world, optics, body and mind—through natural geometry—in just the right way. Berkeley trumps skepticism by doing away with the whole framework that renders it coherent, by turning mind inward into its own territory. Relations between ideas must be arbitrary in the sense that they have no necessary external standard. But in trying to rid himself of skepticism by turning inward, Berkeley must hold fast to the opposite of skepticism, to the claim that there is a comprehensibly ordered experience that can render itself coherent and true. There is a natural meaning to experience that our minds recover, even if this meaning is not legislated by external matter, and in this sense meaning is arbitrary and the human mind has the power to recover it without error since meaning is not beyond human mind. But precisely to the extent that this meaning is arbitrary, the human mind does not have the power to fix its own network of ideas from the ground up, else it would have to rely on innate ideas that are non-arbitrary, which would count as an outside standard and thereby stand as another inroad for skepticism. Yet there still must be a source for the natural organisation of experience—an *a priori* coiled in the heart of experience. Some other mind—God’s mind—must come into the mix and sort experience out on behalf of human mind. So for Berkeley, experience of depth requires a connection to God’s mind, over against the human mind. Distance is not due solely to the power of the human mind, and the true object of distance perception is God *qua* author of nature.

The tension between nature and arbitrariness has important implications for Berkeley's account of distance. While "outness," depth and distance are not to be located in an extended matter or absolute space outside human mind, "outness" and distance do relate human mind to God's natural ordering of the content of experience.

For Berkeley, then, distance has a double structure. Distance is an anticipation based on human experience, but the possibility of this anticipation depends on the natural structure of ideas that is given to human mind by God. Because of the self-evidence of visual language, signs of distance serve as *cues* to a *dimension* that is metaphysically arbitrary in its structure but that must be naturally fixed with respect to cues if humans are ever to perceive it. The significance of cues would be endlessly deferred unless they touched down in a non-arbitrary structure. It is in this sense that Berkeley's account of distance follows a cue-dimensional model of depth perception, even if the meaning of distance is intrinsic within sense, without an inferential reference to a geometrical structure or causal system extrinsic to mind.

Like distance, the tangible space that is signified by visual language also has a double structure. If tangible distance is nothing more than human mind's anticipations of future tangibles, then tangible space, because it is a system of tangible distances, is nothing more than a system of human anticipations of the tangible. This conception of space concords with Berkeley's attack on Newtonian absolute space in the *Principles*:

From what hath been said, it follows that the philosophic consideration of motion doth not imply the being of an *absolute space*, distinct from that which is perceived by sense, and related to bodies; which that it cannot exist without the mind, is clear upon the same principles, that demonstrate the like of all other objects of sense.... So that when I speak of pure or empty space, it is not to be supposed, that the word "space" stands for an idea distinct from, or conceivable without body and motion.... When, therefore, supposing all the world to be annihilated besides my own body, I say there still remains *pure space*: thereby nothing else is meant, but only that I conceive it possible for the limbs of my body to be moved on all sides without the least resistance: but if that, too, were annihilated, then there could be no motion, and consequently no space. (*Principles*, §116)

Space is not a thing sensed, or an absolute container that holds all things. Rather, to say that there is space is to say that I can anticipate that there are movable bodies. Space is a system of internal relations between ideas that mind has and other ideas that mind can anticipate having. But we cannot have ideas of space without actually having empirical ideas of tangible distance. (Berkeley admits this much when in *Principles* §116 he links ideas of space to anticipations of bodily motion, which ideas of motion must involve ideas of distance.) Space, then, precisely because it is nothing without our experience of tangible distance, should also be subject to the doubling that is found in tangible distance. That is to say, space is not just a system of ideas internal to human mind, but space must have an internal ordering principle that is beyond human mind.⁵⁷

There is another way to argue for this doubling of space in the Berkeleian account. If my idea of space were based only on what I can anticipate about my bodily movements and tangible experience, then the extent of space would be dependent on the anticipations that I can make at present. But the space that I take myself to be in goes beyond the anticipations that I can now make. I know that no matter where I am, I can always anticipate either: that I can move my body; or that I will not be able to move my body because it is restrained by another body. In either case, according to Berkeley, I could say that there is space. But according to Berkeley's account of human experience, there is nothing explicit in my immediate experience that will let me pre-anticipate this possibility, because space is not something outer or independent of particular bodies, but depends on anticipations that depend on the particular bodies that I am now seeing; and nothing that I could ever learn could let me make definite claims about future experiences

⁵⁷ Cf. Thrane, 1982.

of space. I believe that it is because God is an internal ordering principle in ideas in Berkeley's account that it is possible for a Berkeleian to pre-anticipate space.

In sum, as with Descartes, for Berkeley the origin of the language of depth and the structure of space must already be fixed prior to our experience. Berkeley's account of this fixing is quite different from Descartes's. Descartes's language consists in a 'code' built into the causal chains of the world, such that things cause the right ideas in us. But Berkeley's position is that ideas cannot be caused by mechanical motions but only by mind, so Berkeley ends up positing a language of experience whose internal meaning and order must be latent within and beyond the language, even if we only make this meaning explicit through experience. In Descartes's account our connection to things in depth depends on our disconnection from causal structures whose 'material ideality' rests in God beyond us; in Berkeley's account our connection to things in depth depends on our disconnection from ideal structures whose ideality rests in a mind beyond our mind, God's mind. In both accounts, however, the connections and disconnections are rooted in a 'language' that mediates between us and things in depth. This language allows us to be in touch with things that appear at a distance from us. But in both accounts we are not responsible for the origin of the language. So the shape of our experience of depth and the language of depth is fixed external to our experience.

This result, once again, makes it difficult to explain empirical phenomena of depth perception, and to explain the determinate and changing relations between our experience, depth perception and the structure of space.

Merleau-Ponty and the Motivations of Depth

It is late at night, and I am working, terribly exhausted, wrapped up in a trance-like involvement in which the momentum of writing sustains me. A disturbance that I experience as being in me jars me from my work and suggests in me a movement beyond the corner of my eye. Once I have pulled myself together from this startling intrusion, I can refer this disturbance and movement to the clicking of the radiator, but as best as I can make out, I first experienced this as a sort of disruption of my 'insides' that shattered my work; the locus of this disruption was not quite within me, but neither did it belong to some definite thing outside me. It was all too close. When I found myself turning in the direction of this disturbance, the room closed in around me in a sort of looming vagueness, until I worked out that the disturbance was outside me, at which point the room settled into a less disturbing shape.

I am extremely sick, lying in bed. A thermometer marks the room as being at its normal temperature, but I feel cold. Unlike my usual feeling of cold, in which I experience myself as having a sort of integrity that is protected by my body heat and clothing, and being confronted by a source of cold outside me, I do not feel the coldness as confronting me, as if there is some outer boundary between me and the cold; the cold thoroughly permeates me, as if it has no distance from me and therefore cannot be avoided, as if the cold is within. Likewise, smells and sounds in the house are unavoidable permeations of me, they hurt within me, although I also *know* that these causes belong in an 'outside' source. The sun breaking through the curtains produces pain within, and again there is an ambiguity as to its experienced outwardness from me—*qua*

sun and shining thing, I *know* that it is distant, but *qua* experienced source of pain it is felt as an invasion; and this is not the way I feel pain from the sun when I look at it with healthy eyes. The first sign that I am feeling better is that perceived things show themselves as having some distance from me, as having a distinctiveness that roots itself in a locus outside me. When I am sick, *I* am cold, *I* feel sounds, smells and light as pains that overwhelm me, and with this "I," I designate a being in the world unlike that of the usual "I," which detaches itself from its surround and takes disturbances within the body as belonging to the outside world. The "I" of sickness cannot hold things off from itself. In sickness the otherness of things is not referred to some linear, stable, spatial dimension outside me, but to a struggle over the very boundaries through which I secure my place in the world. The whole issue of the recovery of dimensions from sensations is mooted when every sensation and perception ruptures the sort of ingathering activity through which I clear out a place for myself amidst things. This suggests that my everyday experience of space as a dimension in which I and things around me have a clear place apart from each other perhaps depends on holding off the sort of experience that I encounter in illness. We could say that illness reveals the interpermeation of self and world that, as I will argue, undergirds everyday experience.⁵⁸

A cognate but different experience of depth and distance arises in the mood of despair.⁵⁹ In despair, things, circumstances and events around us can make a claim on us as being inevitable. There is no way to achieve a separation between ourselves and the circumstances that weigh in against us and obliterate the realm of possibilities in which

⁵⁸ On these issues, cf. Leder's discussion of illness and the body (Leder 1990, 79-83).

we set up our own projects, fulfil our own intentions, or carry out our lives. This mood is reflected in perceptual life—there is nothing to do, there is nowhere to go, the sky closes in, actions seem pointless, and so on. The buoyant dimensions of life and freedom that are shattered by a mood of despair present themselves in motor-perceptual dimensions of lived activity. Conversely, this suggests that the meaningfulness of the motor-perceptual dimensions of lived activity that present themselves to us in spatial perception are in part buoyed by moods, rather than being pure dimensions external to us.

A young child is playing happily. Somebody drops a book, making a loud, sharp noise, and all of a sudden the child's mood is shattered. She cannot stand any relation to things outside her, she pushes everything and everyone away, beating everything away. On other occasions, a particular facial, bodily or verbal gesture—or even any such gesture, the mere fact that others have this gestural possibility relative to the child—can set off a reaction that is articulated along more verbal lines, in which she yells at everybody not to look at her. We can imagine that in these cases the child experiences something similar to an invasion of herself by a world that had, when she was in possession of it as a place to conduct her play and be herself, referred to things that had some distance from her—some moment of separation that allowed her to be in her own way with a certain feeling of security, that gave her a place from which she could deal with things. Other people's gestures undermined her place by collapsing this moment of

⁵⁹ Cf. Heidegger's reflection on mood (*Stimmung*) in *Being and Time*, and on indifference and boredom in "What is Metaphysics" (in *Basic Writings*).

separation, by exposing the world as a place that is not in truth centred around her, but that has alien centres of activity within it.⁶⁰

I am called upon to speak in front of a large audience in a steeply raked, dimly lit amphitheatre. The architectural structure, the conic rake of the seats that was so clear to me when the lights were on and the hall was empty, the distance between the front of the room and the first row of seats, vanishes when I start speaking to the people in the room. Instead of depth being a symmetrical, fixed relation in which I am just as distant from everyone else as they are from me, I am suddenly in a situation where other people loom over me, where they are close up against me so far as I try to speak to them, but I am far off from them so far as I am just standing up in a room trying to talk to them.

Ishmael remarks in *Moby-Dick*:

Now, in calm weather, to swim in the open ocean is as easy to the practiced swimmer as to ride in a spring-carriage ashore. But the awful lonesomeness is intolerable. The intense concentration of self in the middle of such a heartless immensity, my God! who can tell it? Mark, how when sailors in a dead calm bath in the open sea—mark how closely they hug their ship and only coast along her sides. (Chapter 93)

I am at a hotel built around a central atrium, in which the balconied floors that ring the atrium decrease in size toward the roof, forming a hollow ziggurat to Capital. When I look over the edge of the balcony to the floor below, I am horrifyingly absorbed into the distance between me and the floor. I cannot 'see the distance' as if it is a measure presented in a dimension of space: something other than an external dimensional distance is presented to me in my experience, something that casts me into anxiety, nausea and fear, something that eats at my place. I must back away from the edge. If I take a few

⁶⁰ Cf. Sartre's various discussions of the look and spatial presence to others in *Being and Nothingness*. Also see Mirvish's (1996) discussion of Sartre on embodiment and childhood. Mirvish's article makes some interesting suggestions about spatiality and human being, through Lewin's concept of hodological space.

steps from the balcony and get into a glassed-in elevator that looks onto the same atrium, I can look into the same visual space without a problem, I can look right down at my feet as the floor below moves toward me or away from me, I can see the distance as a sort of separation in an external dimensional structure of space, and not experience it as a fear within. Clearly the visual information available in these two cases is more or less the same, and there is another factor in the situation that shapes my perceptual experience. I am reminded of Sartre's analysis of the transcending possibilities available at the edge of a cliff—the possibilities and dangers that are open to me as free at the balcony edge, and that are cut off by the glass walls of the elevator, give a fundamentally different meaning to the visual world.⁶¹

“O God, I could be bounded in a nutshell and count myself a king of infinite space, were it not that I have bad dreams.”⁶²

All the above cases⁶³ suggest that the meaningfulness of separation and distance that one experiences in spatial perception is related to the meaningfulness of the place that one can establish for oneself in the world; and that the meaning of this place is established through one's embodiment and relations between oneself and others and between oneself and one's projects, moods, and general form of being in the world. More important, the above cases reveal that depth is not merely an objective dimension fixed external to our experience. The above experiences of depth reveal that not only the spatial determinacy of depth as *quantity*, but the texture of depth as *quality* and the fundamental

⁶¹ See *Being and Nothingness* 65-69.

⁶² Hamlet, in *Hamlet Prince of Denmark*, II, ii, 254-5.

appearance of depth varies with the overall texture of our situated perceptual experience. Our experience of depth is *labile*.

There would then be an intimate and labile connection between our experience of distance and depth, and our general embodied situation within the world. Berkeley argues that outness does not belong to things *qua* material outside us, and the above experiences seem to support this claim. But we would presume that according to Berkeley's theory—and also according to Descartes's theory or scientific theories—the sensations and perceptions produced in us by things in space are the same whether we are ill or not (barring a disease that immediately causes physiological changes in sensory organs or the brain), whether we are anxious, secure or despairing or not, whether we are tired or not, and so on. That is, in Berkeley's and Descartes's theories, and in scientific theories, the structures that relate given cues to the representation of dimensions that we recover from these cues are external to the meaningfulness of our experience. And because the relation is external to the relata, the relata are external to one another—in these theories cues have their identity not in virtue of their role internal to our experience, but because of their place in a mechanical/ideal system that is fixed external to experience, and the meaningfulness of our experience does not impinge on the identity or significance of cues (although as we will see, in the Gibsonian account the motor-perceptual activity of the body dynamically changes the invariants that serve as cues; see the appendix to this chapter). Similarly, Berkeley may be right to say that we are active in determining outness, but the above phenomena suggest that we do not determine outness as a quantity

⁶³ For a further discussion of such phenomena, see Cataldi 1993 and Heaton 1968, part III, esp. chap. 7.

of a dimension that is fixed in itself, external to our experience. (Cases of illusion and other sorts of perceptual ambiguity show that sometimes our perception on its own, without the aid of external objective standards, is insufficient to perceive the world as abiding by a fixed standard external to us.) Against Descartes's and Berkeley's assumption that there is a fixed and external relation between cues and dimensions—against what Merleau-Ponty would call the constancy hypothesis—the identity of 'cues,' the meaning of determinations of spatial experience such as depth and distance, and the very dimensionality of such determinations are *internal* to one another within experience, and are *labile*.

It would be wrong, however, to claim that our experience of depth is purely 'subjective,' that our experience of depth is 'up to us.' In each of the above experiences some being beyond us, a being in depth, impinges on our being and we experience this impinging as a perceptual relation to a thing in depth. The beyondness of the impinging being is not due to us, and in fact it is precisely in virtue of there being impinging beings beyond us that we take them up as having their own place and depth. Our placement of things in depth is not wholly arbitrary and is not purely internal to *us*, even though the determinacy and meaning of this placement varies with our mood, health, projects and so on—our placement of things is internal to our *experience* and our experience always arises within a situation.

The above phenomena and the analysis of Descartes's and Berkeley's accounts, then, leave us with the following problem. We must give an account of how it is that we perceive things in space, which things, *qua* being in space, are in some sense inherently beyond us. We must do so without getting into the sorts of circularities that are

problematic insofar as they force us to posit that cues and represented dimensions are external to one another, and that the circle between cues and dimension is thus rooted within a static structure that is fundamentally external to our experience. We must avoid the constancy hypothesis, which assumes that there are fixed relations between sensory givens that have their determinacy in themselves, and experiential meanings to which these supposed sensory givens supposedly refer. We must instead give an account in which 'cues' and 'dimensions' are internal to one another within the shaping⁶⁴ of experience. Yet we must show how this shaping is grounded in our being in the world. That is, we must show how this shaping emerges from the facts and contingencies of our situation *qua* meaningful, so that this shaping is neither swallowed up within an immediate transcendence of our being, nor expelled into structures that entirely transcend us; rather we must show how this shaping is inherent within the transcending opening toward other beings that is given by the very medium through which we work at being in the world: the body.

The resources for such an account are to be found in Merleau-Ponty's phenomenology, which does not fall into the paradigm of a cue-dimensional model. In brief, the phenomena lead Merleau-Ponty to an account in which depth perception is an

⁶⁴ I use the word "shaping" here and in what follows to move away from and replace the word "structure." I intend shaping to indicate a more dynamic form of structuring, which structuring is a constitutive feature of our being in the world. This, I think, is in keeping with the sort of development that we find in Merleau-Ponty's notion of structure across his *corpus* from *PdIP* on, as well as his critical relation to the notion of structure and Gestalt in *SdC*. This dynamic sense of structure is, I think, suggested by Merleau-Ponty's problematic notion of "style" (see Pietersma 1989). My word "shaping" is intended to both capture the sense of style as dynamic structure, and to capture the sense that style itself always emerges within a contingent situational dynamic. Style is itself shaped by the situation that it shapes, since it is the style of things that motivates my approach toward them, which approach 'styles' things.

On style, cf. Geraets's (1981) discussion of the unity of things in depth, in which he comments that the unity of things is a style, which is to say that it is not a perfectly circumscribed form that is immobilised and congealed (240). On style and the dynamics of form also see Dillon 1971. For a discussion of the development of the concept of structure in Merleau-Ponty's thought, see Madison, 1981.

activity that shapes itself through the developing interrelation between the embodied perceiver and the perceiver's world. But at the same time this shaping principle establishes the identity of the embodied perceiver and the world. Depth, then, is *constituted* through the embodiment of the perceiver's co-presence to the perceived in the activity of perception within a situation; depth is the meaningful perceptual shape of the perceiver's co-presence with the perceived. Depth arises in place.

*A Phenomenological Portrait of Descartes's and Berkeley's Account,
and a Return to the Phenomena*

To heighten the contrast between the cue-dimensional model and the account that I develop from Merleau-Ponty, and to draw out a methodological and ontological issue, I would like to give compressed 'phenomenological portraits' of the Cartesian and Berkeleian accounts. These portraits will show how fundamental facts of experience compel Descartes and Berkeley—and likewise the traditions that they found—toward accounts that idealise the relation between the perceiver and space, and thus compel them to root spatial perception in an ontology that insulates the subject from the object. It is precisely this sort of insularity that Merleau-Ponty wishes to overcome, and it can only be overcome by taking a different stand toward the phenomena and the body—this is the only way to avoid painting ourselves into the same portrait once again. In giving these portraits, I am engaging in the same sort of project as Leder, who tries to show that the phenomenology of bodily experience opens us to a Cartesian dualism, in the sense that such a dualism appears to be 'natural' for us, since our bodies can seem to vanish 'behind' our minds in our experience. I am trying to suggest how our 'natural' experience

of space can lead us to Cartesian and Berkeleian positions on spatial experience.⁶⁵

Descartes and Berkeley are far from foolish, and we will be better off if we can understand how the phenomena compel their accounts.

The Cartesian account could be portrayed as follows. My experience of depth perception entails that I experience space as an unshakeably pervasive structure that undergirds the very possibility of there being things that are distinguishable from me. But space then undergirds my possibility of being, so I am a being in space too. Since I am only *in* space, I can never be present to space as a whole, I can only directly experience the locus of points occupied by my body. But this is just to say that there is a determinate space beyond me that I do not directly experience. While I cannot directly experience space as such, since I cannot be immediately connected with something that precisely exceeds me, all things are like my body in having a determinate location and way of being within the determinate structure of space. So there is a determinate connection between my sensory surfaces and things in space. For example, light travels in a determinate manner through space toward my eyes. In the right circumstances, I can therefore *infer* the spatial determinations of things other than me by the sensory effects that they cause in my body, through the connecting disconnection of light *qua* motion. But my experience cannot escape this inferential process to directly experience the 'outside view' that would secure this inference. I am *in* space as other things are in space, and yet I have ideas of things at a distance from me, which ideas are nothing like things themselves. But this just means that my natural, causal body and the natural, causal language of depth must be shadowed by ideal doubles that guarantee that the encoding language of depth and my

⁶⁵ See Leder 1990.

decoding body are capable of yielding a veridical experience of depth. The ideality that supports the causal language of depth recedes behind experience, because it is presupposed by the experience of depth.

The same fundamental experience motivates the Berkeleian account, but leads to quite a different result. It is true that I cannot experience space as a whole, since I am *in* space. But this is not because of the material limitation that I cannot make immediate contact with material beyond me, it is because my experience in the first instance consists of immediate ideas that are disconnected from one another and disconnected from anything else. To say that I am *in* space and have an experience of depth, is to say that I am related to ideas that have a unity beyond me. But the immediate ideas that I am given in experience have no internal relational structure of their own. The relational structure that puts me *in* space and that relates me to things in depth must be due to my power of connecting ideas, and to this extent it is based in arbitrary relational possibilities that are given to my mind. But insofar as my experience is naturally comprehensible and the space that I experience in fact exceeds me, this relational structure cannot be arbitrary and cannot originate in my power alone. It must be due to the power of God, in virtue of whom this relational structure is already latent within possibilities given me in experience. Here too we find an ideality, namely, that of the linguistic structure of ideas, which linguistic structure corresponds to a unity behind the immediate ideas given me. It is this unity that I recover when I learn the language of ideas of sense.

The Cartesian and Berkeleian accounts, then, both interpret the fundamental experience of depth perception as indicating that we are *in* space. With the preposition “in” I mean to mark an insularity and ideality. We are present to a space from which we

are also fundamentally absent, since space in its very presence exceeds us in such a way that our ideas of space can only connect with space as words connect with things. To be specific, the body with which the Cartesian “I” is united is extended matter in space, but the Cartesian “I” who perceives through this body is disconnected from this material space and thus depends for perception on its ideal unity with the ideal materiality of the body and this body’s ideal relation to Descartes’s “new world.” For the Cartesian “I,” the experience of being present in space thus depends on being co-present to an ideal materiality; but the ideality of this material must be absent from perceptual experience, since it can only be comprehended in thought. The Berkeleian perceiver is present to immediate ideas that acquire the significance of “outness” that is proper to space, and is disconnected from all else. But the significance of immediate ideas is rooted in anticipatory, temporal connections between ideas. In one sense, this significance is absent, because it is deferred to the future; yet in another sense, it is present, because the anticipatory relations have a natural clarity in virtue of God’s authorship of the linguistic structure that undergirds anticipations. To return to the linguistic model of depth: for Descartes, the encoding language of depth can speak to us because the ‘book of nature’ is God’s code-book, and this code is inscribed in the world and our being in advance of our experience; and for Berkeley, the language of depth can be learnt because nature is God’s *langue* (in the Saussurian sense) and our experience is exposed to the *parole* of God’s visual language from day one. But God’s code-book and *langue* are ultimately beyond our being and are an ideal absence that underwrites our presence to beings in depth.

For both Descartes and Berkeley, the question of depth perception is thus a question of how we can be conscious of things that are in a space beyond us and be conscious of a

space that is beyond us. In Descartes's account, the ideas that have their being in the perceiver are nothing like the being of the object, and the mind that has these ideas is nothing like the object of which this mind is aware; in Berkeley's account, mind is unlike the 'materiality' and 'spatiality' of which it has an idea, since human mind is both the power behind the idea of 'materiality' and 'spatiality,' and the 'materiality' and 'spatiality' of which human mind has an idea depend on an order beyond mind. The perceiver, construed in terms of consciousness or mind, is not *of* space, the perceiver is severed from the order of being to which the perceived belongs, the perceiver is only *in* a space from which she or he is absented and disconnected by the language of depth. In Descartes's and Berkeley's accounts, depth perception is the *recovery* of spatial dimensions that are ontologically fixed external to the experience of the perceiver, from ideal cues that are given to consciousness *qua* external to spatiality—and dimensions can be recovered from cues only because of the language of depth. The recovery problems in Descartes's and Berkeley's accounts, then, signal an ontological feature of their accounts, that the perceiver is not at all of the same order of being as the perceived. We are not placed in the space that we perceive.

In cue-dimensional models, the questions to be answered by perception are thus fixed by a language of perception that holds the perceiver in a different realm from the perceived, and thus institutes a fixed medium of relations between the perceiver and the perceived. The question, for example, is to figure out how far a thing is from me; the question is not to figure out how my relation to the thing acquires meaning in the first place. In Merleau-Ponty's conception, on the other hand, the question posed to the world by the embodiment of the perceiver is far more primordial, since the distinction between

world and perceiver is, as we shall see, constituted by the perceptual activity of the embodied perceiver in relation to the perceived. The perceiver is also *part* of the perceived, since the primordial distinction that parts the perceiver from the perceived depends on their enmeshment—the distinction arises in living, cognising, perceptual activity. This primordial distinction shapes the sorts of perceptual questions that are at issue for us in our life—the language of depth is constituted within lived experience. It is the *embodied perceiver's* already ongoing perceptual dialogue with the spatial world that constitutes the basic questions of perceived space; the perceiver is not merely a conscious subject *in* a space whose fundamental structures and meaning are already constituted exterior to experience, but is an embodied perceiver who is *of* the place in which spatial perception arises. The perceiver is *of* space and place.

Merleau-Ponty's account, then, starts from the same experience as Descartes and Berkeley, but conceives it in a different way. Thus one and the same experience can, in the first instance, support the claim that we are *in* space or *of* space. But this suggests that the way beyond the circularities of Descartes's and Berkeley's accounts is not to posit a new version of an inferential or intrinsic language of depth, to posit a new cue-dimensional model of spatial perception that proposes a new sort of relation between cues and dimensions (neural nets, dynamic systems, etc.), but to give a different account of the ontology of the perceiver and of depth itself.

As I have noted above, it is not a matter of indifference how we conceive spatial experience and the ontology behind the problem of depth—to 'decide' whether we are *in*

space or *of* space.⁶⁶ But neither is it a matter to be decided empirically, for conceiving the problem of depth as one sort of problem or another is precisely a matter of deciding *what there is to be explained*—the decision is ontological. It is a decision between—we might put it—phenomenology and heterophenomenology; between the first person and the third person; between an attempt to account for the meaning shaped within concrete being in the world as it is for us (to put essences back into existence), and an attempt to explain how chains of causality produce certain sorts of subjective reports as a causal result that is not fully warranted by what there is.⁶⁷ The decision is thus a commitment to what there is. If we take our labile experience of space as we live it to belong to that which is, rather than to be a mere behaviour that refers to something which is not (as would be the case with heterophenomenology), we must pledge ourselves to phenomenology, because heterophenomenology cannot account for our experience in terms that makes sense within lived experience. The phenomena themselves outwit the third person.⁶⁸

To follow Merleau-Ponty's phenomenology is, then, to return to the primordial roots of perception, prior to the appearance of the already constituted subjects, objects and spatial structures from which heterophenomenology begins. It is to return to

⁶⁶ Page 25 ff.

⁶⁷ Cf. the preface of *PdIP* for Merleau-Ponty's discussion and defence of the project of phenomenology. See Dennett 1991, Part I, for an argument for heterophenomenology as a method for explaining consciousness (compare Flanagan 1992 and Searle 1992). For suggestions about an argument against heterophenomenology, see page 156 in chapter two below.

⁶⁸ This is not to suggest that the explanations developed within heterophenomenological sciences are of no use; they are of much use if we wish to produce various sorts of automata that will do useful things, or understand the physiological workings of our body, and these understandings are necessary to phenomenology. The question is which science we make our architectonic when we wish to explain human being. The position that I am following is that we cannot explain human being unless we understand that the body as we live it cannot be understood as an object of third person description; so the results of third person science must be subsumed within phenomenology if our interest is lived experience. Cf. Merleau-Ponty's discussions of science in *SdC* (particularly in part three) and *PdIP*; also see Leder's (1990)

experience prior to the constitution of cues and dimensions. This return is difficult, and is the focus of the rest of this work. It is difficult because it requires a shift in our ontological conception of the perceiver and of human being, and this shift is necessary precisely because the very boundaries and shapings of human being are at issue when we withhold our appeals to already constituted subjects and objects of perception. It is precisely in spatial perception that such boundaries are most at issue, for space stands between you and me, and between you and every other being that you have encountered; it is for this reason that I have chosen to take up the issues of human being and our relations to others through a treatment of spatial perception.

The Supposed Signs of Depth are its Motivations

Given the problem of depth perception and spatial perception as I have sketched it above, my plan is as follows. In the rest of this chapter, I will refine the problem and root it in the phenomena by discussing Merleau-Ponty's claim that "The supposed signs of depth are its motivations."⁶⁹ The crucial issue is the sort of internality of 'cue' and 'dimension' apparent in the phenomena that supports Merleau-Ponty's concept of motivation. This discussion will lead to a question about the nature of the sort of being in the world that shapes such motivational relations in the case of spatial perception. As Casey shows, for Merleau-Ponty depth is not a dimension, but a primordially of our being in the world, a

reflections on the relation between science and phenomenology, which are particularly interesting given the question of medicine that frames them.

⁶⁹ *PdIP* 529. This is one of Merleau-Ponty's entries in the table of contents for the chapter on space, in the section on depth. A general note on my usage of quotations from *Phénoménologie de la Perception*. In many cases I have modified Smith's translations of the French, in order to bring out the web of meanings and connotations that are apparent in the French, and to ensure that significant philosophical and terminological connections are not obscured.

medium in which the perceiver and the perceived are immersed; and according to Casey it is place that grants depth, that is, Casey's ontology of depth is an ontology of place, more specifically of implaced embodiment.⁷⁰ What I plan to do in this work is to flesh out Merleau-Ponty's ontology of embodiment in order to understand how embodiment implaces itself and perceives the spatiality of its world. This ontology of embodiment will thus outline the solution to the *new problem* of depth—an ontological problem, rather than a mechanical, intellectual or neurological problem. This new problem has emerged from the critical analysis of inferential and intrinsic accounts of depth. The answer to this new problem will be provided by the account of embodiment, the body schema and habit in chapter two, and the discussions of embodied, implaced spatial perception and the topology of the lived body in chapters two and three.

The discussion of motivational relations in this chapter is thus developed with an eye toward the understanding of embodiment articulated in subsequent chapters. At the outset, then, I would like to note that my understanding of Merleau-Ponty on embodiment builds on Russon's discussion of Merleau-Ponty's ontology of nature as one in which living organisms are "hermeneutical machines" that 'perform themselves' by interpreting and translating the *environment* such that organism and environment are inseparably reflective of one another; and in which human experience is a transcending of such immediate structures of 'environment translation,' a transcending that is built on reflection, habit and other forms of human *world* building.⁷¹ (Throughout I will mark the distinction between environment (*Umwelt*) and world (*Welt*) as suggested by Russon and

⁷⁰ See Casey 1991a (esp. 10-11); and Casey 1993. My usage of "implace" and "implacement" is inspired by Casey's discussion in Casey 1993.

others, following Merleau-Ponty and his tradition—the environment is organic, whereas the world is humanly meaningful.) My understanding of the ontology of embodiment and perception also draws on the distinction between “enactive” and “representational” accounts of the organism and perception as proposed by Varela, and developed by Thompson, Varela, et. al. in their critical treatments of traditional accounts (especially of Gibson and ecological psychology); and my understanding draws on their positive claims about the interrelation of perceiving organisms and their perceptual environment.⁷²

It would be appropriate here to make a remark about my critical relation to science in the material that follows. In this work I do not intend to give a detailed *general* analysis of current scientific accounts of spatial and depth perception, that is, an account of the methodologies and theoretical posits of such accounts. This would require a lengthy treatment, and take me away from my central concern, which is ontological, methodological and philosophical—a concern in some sense prior to science, a concern about what sort of ‘science’ we should do. But as in Merleau-Ponty’s *Phenomenology of Perception*, *particular* scientific accounts appear as interlocutors in what follows. It would be appropriate to foreshadow my attitude toward these accounts by schematising a link between scientific traditions and my analysis of Descartes’s and Berkeley’s accounts with respect to spatial perception, since, as I have claimed above, Descartes’s and Berkeley’s approaches are seminal for current scientific traditions in spatial perception. Basically put, where Descartes and Berkeley ultimately rely on God as the foundation of

⁷¹ See Russon 1994, particularly section II.

⁷² See, e.g., Varela 1991; Thompson, Palacios and Varela 1992; and Varela, Maturana and Uribe 1974. Also see Tauber 1991b for a discussion of the interrelation of the organism and the environment within the immunological self; cf. the works collected in Tauber 1991a.

an external connection between cues and dimensions, ongoing inferential and intrinsic traditions in the sciences rely on evolution and various different conceptions of neural mechanisms, and various elaborations of physical laws. The criticisms that I articulated in the case of Descartes and Berkeley thus have cognate forms in current scientific traditions. The details of the schematisation would intrude on the flow of argument, so I include the schematisation and criticism as an appendix to the chapter.

I will take up Merleau-Ponty's doctrine that "The supposed signs of depth are its motivations" in the context of the above discussion of the languages of depth of Descartes and Berkeley. Things in space are beyond us; we do not have immediate contact with them; to be *of* space is not to be identical with things in space; and it is not entirely up to us how things in space appear to us. So there is a mediating term between ourselves and things in space, and thus there is a 'language of depth,' even if the language is not like Descartes's or Berkeley's. But this language as medium of our relation to things in space is not external to us. It is not an encoding causal system beyond us or a language that is purely internal to ourselves as conscious, it is a language that is made out of our embodiment itself *qua* medium of our being in the world. It is this characteristic of the language of depth that is marked by Merleau-Ponty's concept of motivation.

Merleau-Ponty's concept of motivation stems from his analysis of Cartesian and Berkeleian accounts of depth perception.⁷³ We have seen that the Cartesian and

⁷³ For a synopsis of Merleau-Ponty's discussion of depth and motivation, in the context of an excellent discussion of being in the world, see Kockelmans 1976. For a discussion that gives some interesting suggestions about the relation between motivation and Merleau-Ponty's construal of the Husserlian concept of founding, see Rojcewicz 1984. For an excellent exposition of Merleau-Ponty's account of depth that shows the relation between primordial depth, motricity, grasp, maxima and meanings, see Geraets 1981. Also see Merleau-Ponty's discussion of motivation in the chapter "'Attention' and 'Judgement'."

Berkeleian positions lead to circularities in explanation. We may claim to know the object's distance from us by knowing the vergence angle of our eyes when they are directed toward the object, or by knowing the feel of the turn of the eyes, but experiencing these cues as signs of depth already requires that we experience ourselves as beings who are oriented toward a thing in depth, that we experience ourselves as being *of* space, not merely as being privy to signs of being *in* a space that is 'outside' us: "The 'signs' which, *ex hypothesi*, ought to acquaint us with the experience of space can, therefore, convey the idea of space only if they are already involved in it, and if it [space] is already known."⁷⁴ That is to say, any perceptual situation that can supply us with meaningful signs of depth must already be one in which we try and take up things in depth, prior to our being supplied with signs—when we relax our hold on the world and let our eyes cross or drift out of focus, we no longer experience the turn of our eyes as signs of depth, we no longer have the hold that lets our body be a seer in depth; neither do our eyes give us signs of depth when we have trouble getting hold of an ambiguous thing. Our embodied being in the world must already *anticipate* our being in depth—the meaning of signs depends on this sort of anticipation, which constitutes the givens of sense as meaningful perceptual *motives* of depth. Motives are thus internal to our perceptual involvement with the world.

For discussions of Merleau-Ponty's account of depth also see Casey 1991a, which is important for its analysis of the primordially of depth; Cataldi 1993 (esp. chap. 2); and Mallin's discussion of size constancy in chap. 3 of Mallin 1979, in which Mallin develops Merleau-Ponty's account through his ontological reading of Merleau-Ponty.

For a treatment that touches on depth perception and that suggests how Merleau-Ponty's general account of spatial perception figures within his account of perception, see Langan 1966, esp. pp 42-59. Also see Barral's (1965) discussion of the spatiality of the body (136-142).

⁷⁴ *PdIP* 297, PP 257.

Let me develop this by taking up Merleau-Ponty's discussion of the relation between apparent size and apparent depth.⁷⁵ In a cue-dimensional model of depth perception, when we consider the monocular sensory information given by an object, it stands as a cue that must signify *both* the apparent size *and* the apparent depth of the object in space. In the scientific literature this relationship is formulated as the size-distance invariance hypothesis, which states that the ratio between the apparent size and apparent distance of the object is proportional to the visual angle made by the object. So, given only the visual angle as a sign of the object, there are an indefinite number of apparent sizes and apparent distances that are signified by the visual angle.⁷⁶ Say the sign in question is a circle of uniform colour that projects over half the area of the retina. On its own, this could signify a small object up close, or a large object far away, or some proportion in between these extremes. For example, it is easy enough to construct an illusion in which the increase and decrease in the diameter of a flat circle appears to be the procession and recession of a piston-like thing. Apparent size and apparent depth seem to be interchangeable significations of visual signs. So, how is it that we can use our eye or eyes to perceive the object's depth and decide the 'balance' between size and distance?

Merleau-Ponty notes the following phenomenon, which shows that in advance we tend to form definite relations between apparent size and distance:

⁷⁵ Merleau-Ponty's discussion is a continuation of his general criticism of the constancy hypothesis. See the introduction to *PdIP* for Merleau-Ponty's criticism of this hypothesis, which claims that perception is based on constant relations between sensory stimuli and responding behaviour. For a careful discussion that situates Merleau-Ponty's criticism, see chapter one of Madison 1981.

⁷⁶ See Turvey and Shaw 1979 and Barac-Cikoja and Turvey 1995 for critical discussions of the size-distance invariance hypothesis from within the tradition of ecological psychology.

If we look for a long time at an illuminated object which will leave behind it an after-image, and if we focus subsequently on screens placed at varying distances, the after-image is thrown upon them [the screens] with a diameter greater in proportion as the screen is farther away. (*PdIP* 300, *PP* 259)

This suggests that if the sign of the object is taken to be fixed in itself, trying to take hold of the object as being at different apparent distances ‘changes’ the apparent size of the object, and not according to the constant geometry of the size-distance invariance hypothesis, which would predict that the apparent size of the object would decrease as it appears at ever further distances. Apparent size and apparent distance settle together in a non-geometrical relation that anticipates a meaningfulness to be found in the object of perception and in the perceptual situation as a whole. Other phenomena cited by Merleau-Ponty show that the settling relation varies in complicated ways across different situations.⁷⁷ According to Merleau-Ponty such phenomena show that:

... the phenomenon of ‘apparent size’ and the phenomenon of distance are two moments [*moments*] of a comprehensive organisation of the field, that the first stands to the second neither in the relation of sign to meaning, nor in that of cause to effect, but that, like the motivating to the motivated, they communicate through their significance. Apparent size as experienced, instead of being the sign or indication of a depth invisible in itself, is nothing other than a way of expressing our vision of depth. (*PdIP* 300, *PP* 259)

Apparent size motivates our taking up the object as being at such and such a distance, and at the same time apparent size is the way in which the object *is* at a distance from us—apparent size is both prior to and simultaneous with our perception of the object at a distance. That is to say, without having the apparent size that it does, the object would not appear at the distance at which we perceive it, and if we could not grasp it as having such and such an apparent size, then we could not place the object as appearing at a distance. But we try to get hold of the object as being at a distance, which means settling both size and distance together, with neither size nor distance being prior to each

other. So it would be wrong to say that the apparent size *causes* the apparent distance, as if apparent size is constituted on its own outside of apparent distance. Rather, the size and distance explicate and sustain one another at once in the moment in which we take up the object as being at a distance. It is not the case that apparent size and apparent distance are related to one another by the visual angle of the object, because of an external associational system that we have learnt by experience, or because of an external natural geometry. Rather, apparent size and apparent distance are internally related by the very demands of constituting a particular object as being in depth: size and distance interpermeate one another in our dealings with things in the world, and this interpermeation is determined by the sort of being in depth possessed by the thing in our relation to it. My house does not appear to increase in size as I approach it, and larger letters on a page do not appear to be closer to me than small letters, and this is in virtue of the way that houses and letters figure as sensible things in my dealings with the world. When size and distance cannot make sense of one another in the situation, we are confronted with a vagueness or the disconcerting phenomenon of not being able to grasp what is in front of us. For example, walking up the stairs late at night a patch of light might invite me into thinking that it is a white patch of wall, but as soon as I press through it with my hand it turns into something with an ambiguous status that unsettles me, in virtue of it refusing to be here or there, to be a thing or a patch of light on another thing. We feel uneasy when we cannot settle the relation between apparent size and apparent distance as belonging to a thing that we can deal with. This is because apparent

⁷⁷ Other recently discovered phenomena would support Merleau-Ponty's claim. See the discussion of various depth phenomena in chap. 3, page 298.

size and apparent distance are not determined on their own external to one another, but are, as Merleau-Ponty puts it, two moments within the phenomenal field⁷⁸ that motivate one another in a way that makes sense of the world, and this sense making phenomenal field is logically prior to the 'signs' of depth.

It must be noted, then, that since apparent size and apparent distance interpermeate one another within the phenomenal field, it is only in the settled situation of seeing a constituted, determinate thing that it makes sense to separate apparent size and apparent distance. As Merleau-Ponty puts it, "Apparent size is, therefore, not definable independently of distance; it is implied by distance and it also implies distance."⁷⁹ We never experience apparent size and apparent distance apart from one another in the normal run of experience; in normal experience we do not experience apparent size or distance at all, we experience things that have their own size and distance. In order to talk about the *apparent* size of a thing, where this size is taken to be separate from the thing and measured according to a standard outside the thing and the perceptual situation, we have to transform the situation. Merleau-Ponty gives the following example:

... is not a man *smaller* at two hundred yards than at five yards away? He becomes so if I isolate him from the perceived context and measure his apparent size. Otherwise he is neither smaller nor indeed equal in size: he is anterior to equality and inequality; he is *the same man seen from farther away*. (*PdIP* 302, *PP* 261)

⁷⁸ In the chapter "Sense Experience" Merleau-Ponty differentiates the general concept of the phenomenal field by claiming that sensations belong to a certain field, that "The senses are "fields"," as he puts it in the table of contents of *PdIP*. In the above quoted claim in "Space" Merleau-Ponty does not specify in what sense he means "field," although it is clear that we could qualify it as a visual field, and thus think of it as a particular perceptual field. Throughout, though, I will use the more inclusive term "phenomenal field," in order to indicate that spatial perception is a motor-perceptual organisation of all phenomena across the senses (and in Merleau-Ponty's doctrine senses are differentiated with respect to the phenomenal unity of the world; see "Sense Experience"). On the other hand, in most cases when I use the term "phenomenal field" I will be referring to the phenomenal field taken with respect to vision. In cases where I explicitly refer to one perceptual domain, I will use the term "perceptual field" (rather than sensory field, since sensory fields already circumscribe a horizon of *perceived things*, and are thus already perceptual). See Madison 1981 for a thorough discussion of the phenomenal field.

⁷⁹ *PdIP* 302, *PP* 261.

It is only by abstracting from the fact that we are watching a man approach us that we can isolate apparent distance and apparent size, and we do this by inserting our perceptual experience into a system of measures that are not inherent within our experience itself. It is only in ambiguous or illusory experiences, in which the object will not congeal into the sort of thing that we can get hold of, that size and distance become dissociated from the thing and each other, that they become *apparent* size and *apparent* distance. But this dissociation is experienced more as an oddity of the thing than a distinction between two different dimensions of measurement, and it is only in reflective operations that we can fully detach these two moments that appear as inseparable within perception.

Motivating relations, then, are quite different from the sort of relations between sign and signified that we found in Descartes's and Berkeley's languages of depth. In Merleau-Ponty's example of motive, the motivating relation between apparent size and apparent depth is like the death that motivates my journey.⁸⁰ The death as motivation only properly achieves its identity as motivation within an overall situation in which I constitute the facts of the death as being a motive for the journey. Or to illuminate another side of this point, as Socrates states in the *Phaedo* "by the dog, I think these sinews and bones could long ago have been in Megara or among the Boetians, taken there by my belief as to the best course, if I had not thought it more right and honourable to endure whatever penalty the city ordered rather than escape and run away."⁸¹ Inert facts in the world are not themselves motives for behaviour outside of the constitutive activity that bestows a meaning upon them, and this constitutive activity makes sense of the whole situation.

⁸⁰ *PdIP* 299-300, *PP* 258-9.

Merleau-Ponty's claim that depth perception is a motivated phenomenon—that depth perception is not structured as a set of relations between cues and dimensions that are determined external to one another, but is rooted within a being in the world that shapes the internal relations and significance of the moments concerned—is a claim that the sort of motivational relations that we find in our *self-conscious* relation to events around us are also found in *perception* itself. As I will show in chapter three, our perception embodies a certain pre-objective self-concern that motivates spatial meanings. Our way of being in the world, then, fundamentally constitutes the meaning of perceptual givens and shapes their interpermeation, which is to say that the data of sense never appear as raw givens, they are always already within our being in the world, which is once again to say that our being in the world *anticipates* the meaning of perceptual motivations and the shape of their interpermeation. A motive, then, is “an antecedent which acts only through its significance,”⁸² since its meaning as antecedent of our activity depends on an anticipated significance that is only actualised through our activity.

The meaning of the perceptual motivations of depth and the shape of the interpermeation of motivations—what I will call the motivational shaping of the phenomenal field with respect to depth, or in shorthand, the motivational shaping of the phenomenal field—thus shows itself as rooted in an anticipatory relation between the perceiver and world. We could say, then, that as anticipatory of a meaningful situation, the motivational shaping of the phenomenal field is rooted in the perceiver's ‘need’ for having a meaningful place in the world. The fact that it is *a priori* possible for this ‘need’

⁸¹ *Phaedo*, 98e.

to be fulfilled shows that the motivational shaping of the phenomenal field is not just a 'need,' as if this 'need' were an external goal, a final ingredient to top up the fuel tank of experience, but that the fulfilment of this 'need' is a constitutive moment of having experience. Moreover, this 'need' only fulfils itself in the dynamic of our interrelation with the world—the world and our history are also factors in the motivational shaping of the phenomenal field. It is in this sense, I think, that Merleau-Ponty claims that *a priori* truths about experience amount to nothing other than the making explicit of a *fact*, the fact that experience is “the reprise [*reprise*] of a form of existence” in which we take hold of (*prendre*) our situation by virtue of our already having a grip (*prise*) on it, by already being enmeshed in the world.⁸³ Our need for a meaningful motivational shaping of the phenomenal field must be fulfilled within our situation in virtue of the fact that our experience is a reprise of a form of enmeshment in the world that precedes all our reflections.

We constitute depth, then, as the perceptual form of our enmeshment with things that are present to us. Our constitution of things as being in depth makes sense of the place that we anticipate having in the world, and it is thus our way of having such a place. Without our constitutive activity of being in the world, there would be no motivational shaping of the phenomenal field, there would be no interpermeation of perceptual 'signs' such that one 'sign' can motivate a particular meaningful depth *for us*, which is all to say that once we grant that embodied perception must be understood as a self-constituting,

⁸² *PdIP* 299, *PP* 259.

⁸³ Cf. *PdIP* 256, *PP* 221, and more generally the chapter on “Sense Experience,” the sections on orientation, depth and movement in the chapter on “Space,” and the chapter “The Spatiality of One’s Own

self-identifying phenomenon that shapes itself through its relation to the world, we can no longer abide by cue-dimensional models of depth perception, in which cues and dimensions are specified external to one another and in virtue of a structure that is determined beyond the perceiver.

Another way to put this is in terms of the concept of structures, which Merleau-Ponty discusses in *The Structure of Behaviour*. Depth is an ‘answer’ to a ‘question,’ which ‘answer’ is not pre-specified in the immediate material of the situation, but is one way of constituting a virtual situation as realising the structure that is implied by the very co-presence of a given order of beings. For example: the shape of the soap bubble is not already represented in its matter, but the soap bubble’s shape constitutes an answer to the virtual situation that is specified by what it is to be a soap bubble, given the laws of the order of nature; the insect’s walking pattern when one of its legs is tied down is not already represented anywhere in the insect, but constitutes a solution to the virtual situation, the sort of ‘question’ to the world that is specified by what it is to be such and such an insect, given the insect’s norms in the order of nature and its milieu; and the child’s decision to break a toy when its attempts to gain a hold on the world are disrupted by its parents, constitutes a solution to the virtual situation—the existential question—that is given by what it is to be such and such a person in such a situation, given the meanings of human life and objects such as toys in the family context. In each case a being works itself toward a kind of dynamic stability that answers questions that are fundamental to it, where these fundamental questions are shaped by the interpermeating relations between the being and its environment/world through which interpermeation the

Body and Motility” for Merleau-Ponty’s discussion of ways of taking hold of the world. I will return to this

being constitutes the identity of both it and its environment/world. Perceived depth is an answer to a fundamental question of our being.

To once again emphasise that Merleau-Ponty's conception of perception and life is a conception in which life and perception are self-constituting phenomena that depend on an interpermeation of self and other, the 'questions' and 'answers' mentioned at the beginning of the previous paragraph are internal to one another. To be a child is to constantly answer questions that can only be present to a being who is already a child answering the questions through which a child assumes her or his identity. For Merleau-Ponty, life and perception resolve questions that can only be posed in a dialogue that is always already underway, and it is in this prior dialogue that we will find the outlines of the motivational shaping of the phenomenal field. Once we see that structures emerge through such a dialogue, we have moved past the concept of structure as such, and into the concept of a being in the world that constitutively shapes itself within the historically situated phenomenal field that is a primordial question of its being.

Now the concept of motivation sketched above is not an abstract concept, but one that can only be fleshed out in a discussion of the way that the motivational shaping of the phenomenal field is rooted in our perceptual embodiment. The sketch is necessary to mark out the *sort* of account that will overcome the problems of the cue dimensional model, and in the conclusion of the chapter I will put the difference between this account and the Cartesian and Berkeleian accounts in terms of the 'languages of depth'—briefly, in Merleau-Ponty's language of depth, "the word has a meaning" *qua* gesture of the body. But first I will venture one last illustration of the sort of internality of perceptual motive

theme in more detail below.

and meaning that is to be found in the motivational conception, and then I will specify the crucial problem of finding the roots of the motivational shaping of the phenomenal field.

The example is as follows. Within the framework of a Merleau-Pontean phenomenology of the organism, organism and food specify and sustain one another through the interpermeating relations in which the organism shapes itself in relation to its environment. As Russon puts it, the organism and the environment reflect one another, and we could say that the organism's constitutive activity is to interpret the environment as self, and it is for this reason that Russon calls organisms "hermeneutical machines."⁸⁴ Without the hermeneutical machine whose presence interprets the environment there is no food in the environment—the food *qua* material is in the environment, granted, but as Aristotle might put it, the material is only potentially food, not actually food, and *we* human observers see this potentiality only because *we* know that there is an organism for which this material stands as food.⁸⁵ The presence of the organism thus constitutes the food as a motive for the organism's appetitive behaviour—the food as motive both compels the organism's behaviour and lets us make sense of this behaviour. *We* cannot make sense of the food as motive unless we know that the food is food *for* the organism, that the organism is already the sort of being that is interpermeated with this sort of material, so its appetitive behaviour is just a reprise of a certain sort of primordial take that the organism has on the environment; and the food would not be a motive for the organism unless the organism actually is this sort of being. Our attempt to understand food, then, throws us back on the organism construed as a being that constitutes itself

⁸⁴ Russon 1994.

through an interpermeation of self and other. For example, if the organism is sick or has had a bad reaction to a certain food, then it may shun certain materials that are potentially food for the organism's species. In the above analysis, then, the mere presence of the organism *qua* interpreter of the environment transforms the physical setting into an environment that motivates behaviours and has significances. If we are to analyse the motivations and their significance, we must turn to an analysis of the organism which, *qua* hermeneutical machine that constitutes motives and significances in the environment as reflective of itself, is like a monad whose internal structure will unlock the secrets of that to which it is related. Only, given that we conceive the organism as a phenomenon that constitutes itself through its interpermeation with the environment, the monad will have windows and its structure will not be static, it will be the sort of self-ordering being whose relational structure I am trying to describe with the word "shaping" rather than "structure," and that Merleau-Ponty tries to capture at the perceptual level with the concept of phenomenal fields. Now the point of the example is that the supposed signs of depth—the cues that I discerned in the Cartesian, Berkeleian and scientific accounts—are akin to the 'food' of the phenomenal field, they are articulations within the field that are already imbued with meaning by the very act that constitutes them as articulate, they are articulations that are articulated in virtue of the fact that they sustain the field as 'nourishing' of perceptual life, as giving perceptual life a sense. But here we must cut off the example, because perception is capable of far more ambiguous and complex relations

⁸⁵ See *On the Soul* II-4, and *On Coming-To-Be and Passing Away* I-5. See the way that Varela makes this point in Varela 1991.

than nutrition; I hope, though, that the example vivifies the notions of constitutivity and internality.

This example will let me tease out the crucial problem that is the focus of the rest of this work. If we are asked to give an account of the ‘shaping’ of the ‘nutritional field’ of an organism, to give an account of that in virtue of which particular things in the environment acquire nutritional meaning for the organism, we know roughly where to look. The problem is to give a cognate account when it comes to the phenomenal field of human perceivers. We know that such an account cannot seek a pre-specified language of depth in which a given roster of cues has an already specified meaning that refers to dimensions that have a pre-set significance. We are to look instead for motivations that are shaped internal to the constitution of the perceiver’s relation to the world; but these motivations must already be at work prior to and in anticipation of actual instances of perception, even if these motivations are solicited by things that we perceive. In his concluding remarks on the relation between the apparent distance and size, where he discusses the appearance of a receding object, Merleau-Ponty points us in the direction of the ‘gripping’ relation between the human perceiver and the world:

We ‘have’ the retreating object, we never cease to ‘hold’ it and to have a grip on it, and the increasing distance is not, as breadth appears to be, an augmenting externality: it expresses merely that the thing is beginning to slip away from the grip of our gaze and is less closely allied to it. Distance is what distinguishes this loose and approximate grip from the complete grip which is proximity. We shall define it [distance] then as we defined ‘straight’ and ‘oblique’ above: in terms of the situation of the object in relation to our power of grasping it. (*PdIP* 302-3, *PP* 261)

On this suggestion, then, the constitution of objects as being perceived in depth is a prior possibility for us in virtue of the fact that we are always already ready to grip the world as being placed around us in a situation that makes sense to us—this is the constitutive ‘need’ that is fulfilled when we articulate the given perceptual world as motivating our

perception of objects in depth. That is to say, the constitutive grip that is referred to here is not an objective grip described in physiological terms, but a pre-objective motor-perceptual relation between our bodies and the world, through which we constitute the world as meaningful place of things; and insofar as grip gives rise to a place of things for us, grip is a world involvement through which our bodies are *of* space.⁸⁶

What we need to show, then, is how the unfolding of a fundamental relation such as 'grip' can lead to the motivational shaping of the phenomenal field. We need to show how the constitutive features of the perceiver's embodied presence to the perceived shape and anticipate the meaning of perceptual givens, yet are open to change in response to perceptual givens. We need, for example, to show how moments such as apparent size and apparent distance are related not by a geometrical or ideal 'language of depth' that is external to the perceiver, but stand as meaningful motives for having a world in depth, in a 'language of depth' that develops in a perceptual dialogue between the perceiver and the perceived.

An account that begins to head in this direction is offered by ecological psychology, and by scientific theories that follow in this tradition, for example, dynamic systems theory. Barac-Cikoja and Turvey (1995), who fall in the latter tradition, make an argument that amounts to the following: in the case of haptic perception (perception by touch) the relation between apparent size and apparent distance is not a fixed geometrical term that is specifiable in a system that is separable from the activity of the perceiver;

⁸⁶ Cf. Madison's (1981) claim that "The perceived world is structured according to the hold [*prise*] that the body has or can have on it. The spatiality of the perceived world is thus a *reply* to the body's dimensions and its possibilities for action. From this point of view the lived body is not *in* space as things are; it is the point or rather hollow from which space radiates and around which things arrange themselves

instead the relation is to be understood as a dynamic system of biomechanical factors within the body of the perceiver, and the relation is thus intertwined with the perceiver's interaction with the environment and is no longer a constant. (Also see Turvey and Carello, 1995.) We, however, have seen that the relation in question is shaped by the *meaningfulness* of our interrelation with things, not just by the biomechanics of this relation. The sort of argument offered by recent programs in science, which roots perception in structures of the biomechanical body *qua* exterior to our involvement in the world, no matter how dynamic, will not do.⁸⁷

The account that we are seeking depends on emphasising that the motivational shaping of the phenomenal field in depth perception is not external to the life of the perceiver, and that our being in depth already shapes our relation to things, prior to perception. Merleau-Ponty writes that depth is:

... so to speak, the most 'existential' of all dimensions because (and here Berkeley's argument is right) it is not impressed upon the object itself, it quite clearly belongs to the perspective and not to things.... It announces a certain indissoluble link between things and myself by which I am placed in front of them...
(*PdIP* 296, *PP* 256)

Depth is not an objective dimension that is interchangeable with other dimensions such as breadth, and it does not belong to things on their own; rather, depth is a constitutive feature of our being in the world, it belongs to the very form of co-presence that is constitutive of our relation to things. In this sense depth is primordial. This is why Merleau-Ponty concludes that:

in order." (29, 49 in the French, emphasis Madison's). On the relation between grasp and space, also see Geraets 1981 and Mallin 1979, chap. 3.

⁸⁷ See the appendix of this chapter for a detailed discussion of ecological psychology within the critical project of this chapter.

... we have to rediscover beneath depth as a relation between things or even between planes, which is objectified depth detached from experience and transformed into breadth, a primordial depth, which confers upon the other [objectified depth] its significance, and which is the thickness of a medium devoid of any thing. (*PdIP* 307-308, *PP* 266)⁸⁸

What I need to show is how the form of co-presence that is constitutive of our relation to things—what I have marked above as our ‘grip’ on the world—is that in virtue of which our phenomenal field has a motivational shaping with respect to depth. That is, I need to show how our co-presence to things shapes primordial depth and thus gives rise to our experience of depth as a spatial dimension. This requires a better understanding of how our embodiment is *of* space through its grasp. In chapter two I will develop this understanding by showing how perception is shaped by the body schema and habits, and show how this means that primordial depth is inherent within our embodied relation to things in place. In chapter three I will show in more detail how the body schema and habit thus shape spatial perception in relation to place.

* * *

To summarise and put these results in terms of the ‘language of depth’: In the account that I will develop from the phenomenology of Merleau-Ponty, depth is a primordial constituent⁸⁹ of our situated, embodied being in the world, and our situation is constituted through our ‘grasp’ of the world, that is, through our overall, pre-objective motor-perceptual involvement with the world, which involvement anticipates the sense of our place in the world. Depth as we perceive it is not a representation of an already constituted dimension. Primordial depth and thence our sense of depth and space are

⁸⁸ See Casey 1991a for an important critical discussion of primordial depth.

shaped by the way in which we try to grasp the world through the anticipatoriness of our embodied being in the world. *We sense space through the anticipatoriness of our grasping bodies.*

In his account of everyday human language, Merleau-Ponty writes that the “word has a meaning.” This indicates that in the first instance (in the case of what Merleau-Ponty calls primary speech), the meaning of a word is neither an idea that the sound of the word provokes in us, nor is the word the outside form of an already constituted thought. Rather, the word is a bodily, linguistic gesture that constitutes meaning and lets us grasp our ideas. The word is our way of *expressing* our thought and making it good.⁹⁰

Similarly, depth is neither an idea that an outside world of motion causes in us, nor is depth the manifest sign of a system of anticipations that has already been constituted as a language of depth. Rather, depth perception is our way of *expressing*—of giving apparent form to—a more primordial depth relation in which we *qua* embodied perceivers grasp the world and make this grasp good as a settled, sensible, placed situation for our life.

In Merleau-Ponty’s concept of language, gesture is the embodied activity in which language finds its expression, and words have a meaning because the primordial word is a gesture that explicates itself. In Merleau-Ponty’s concept of spatial perception, “grasping”

⁸⁹ Cf. Casey’s (1991a) suggestion following James that depth as primordial, like James “voluminousness” is *elemental*.

⁹⁰ See McNeill 1992 for a recent empirical study which claims that “gestures are an integral part of language as much as are words, phrase, and sentences—gestures and language are one system”; this system implies a “dialectic of gesture and language in which the gesture provides the momentary context of speaking and language carries this individuality to the social plane.” (p 2) For McNeill, though, the connection between gesture, language and thought for the most part remains an external connection.

is the embodied activity in which depth and space find their expression. In the case of things:

The passing of sensory givens before our eyes or under our hands is, as it were, a language which teaches itself, and in which the meaning is secreted by the very structure of the signs, and this is why it can literally be said that our sense questions things and things reply to them. (*PdIP* 368-369, *PP* 319)

We sense space because the very activity of grasping things, of constituting things as things for our body, expresses things as having a place in relation to our bodies. Grasp expresses space, it shapes our spatial experience.

As Merleau-Ponty puts it in the chapter “The Body as Expression and Speech” in the *Phenomenology of Perception*, the body “as our permanent means of ‘taking up attitudes’ and thus constructing pseudo-presents, is the medium of our communication with time as well as with space.”⁹¹ Here, in a footnote, Merleau-Ponty cites the long description of sleep from the very beginning of the “Overture” to Proust’s *Remembrance of Things Past*. In the description, the orientation of the limbs of the narrator’s almost slumbering body conjures up past holds on the world, thereby expressing remembered spaces in the present situation, which situation in its sleepiness has retired from setting up its own sensible space. So the fall of the limbs as the body sleeps fills the world with flickers of past space that cannot be shrugged off, except by rising from sleep and taking hold of the present world in waking life.

Our embodiment is our medium of contact with things, and in our motor-perceptual activity of grasping things, of ‘taking up attitudes,’ we constitute primordial depth. Thus our embodiment in its pre-objective grasp of the world is a spatial medium. If we are to understand our body’s sense of space we must learn more about the body’s grasp of the

⁹¹ *PdIP* 211, *PP* 181.

world and the way in which this grasp shapes motivations within the phenomenal field.

The next chapter will investigate this 'grasp' and the motivational shaping of the phenomenal field through a study of the body schema, in order to see how our bodily activity makes sense of perception generally, and makes sense of space.

Appendix: Schematic Treatment and Criticism of Current Scientific Accounts, in Relation to Descartes's and Berkeley's Inferential and Intrinsic Accounts

The aim of this appendix is to give a schematic conception of two current traditions within science, in order to show how the forms of explanation offered in these scientific traditions are cognate with those offered by Descartes and Berkeley (according to my interpretations of Descartes and Berkeley).¹ The schematisation is thus meant to show how Descartes's and Berkeley's accounts live on in current scientific traditions, and it is also used as the basis for some general criticisms of current scientific traditions, although I leave much of that criticism to other writers. More specific criticisms are offered at other points in this work.

The inferential paradigm that we found in Descartes lives on in accounts that claim that our experience is the result of symbolic or informational processing of sensory input, whether this processing is conducted by neural modules, neural networks, the brain as a chaotic system², or whatever. In such accounts, the brain as processor is understood as embodying a system that can model the environment and inferentially recover states of the environment from effects caused in sensory inputs to the brain. This inferential paradigm becomes most explicit when it appears in research programs in cognitive

¹ For some handbooks and discussions that touch on various scientific and philosophical issues, see Epstein and Rogers 1995; Rock 1983; Eliot 1987; Eilan, McCarthy and Brewer 1993; Bermúdez, Marcel and Eilan 1995; Hatfield 1990; and Heelan 1983.

² See Skarda 1987 for an account of the brain as chaotic system; also see Thelen and Smith 1994 (who also refer to Edelman's theory of neuronal group selection).

psychology, cognitive science, or artificial intelligence that take computers to be the tools of choice for exploring the problems of perception. The basic task within this research program is to derive an information processing model that is sufficiently rich and powerful to veridically represent processes in the environment. The basic problem that appears in this program is that recovering information about the environment and modelling it inevitably leads to circularities in which we must presuppose some element of that which we are to recover and model.³ Making inferences about the environment through representations (in 'representation-space') presupposes that our inferences already match up with the environment (with 'environment-space'); but if we only know the environment through inferences, then the matching of representation and environment must be prior to all representation. In other words, the gap between the environment and the perceiver, between cues and exterior dimensions, is cognate to the gap between thought-space and world-space that we discovered in Descartes, and must be filled with a pre-specified 'geometry of representation,' that is cognate to the natural geometry that roots Descartes's language of depth.⁴ Whereas Descartes's language of depth is supported by the immanent activity of God, in current inferential accounts the pre-specified content and inferential structures—the 'geometry of representation'—that is required to recover veridical representations of the environment is set on evolutionary foundations. Organisms that cannot represent the environment veridically, either because of their sensors or the way that they process and act on sensation, die out, so only ones with the

³ See Patricia Churchland, Ramachandran and Sejnowski 1994 for some examples of such problems. Churchland et. al., though remain committed to a neural explanation of the phenomena.

⁴ Indeed, several current projects in knowledge representation and natural inference in computer science are therefore beginning with an attempt to codify all common knowledge and inference patterns.

right 'wiring' for processing representations survive. (Here it should be noted that the standard of veridicality in this concept of evolution is most often conceived as being external to the creature, a move that has been thoroughly criticised in the case of colour perception by Thompson⁵; but once we see that the standard of veridicality is in some respects internal to creatures, we enter a circle that reductionist conceptions of evolution have trouble dealing with.)

This sort of inferential paradigm has been thoroughly criticised by advocates of a "direct" account of perception (which would count as a species of what I have been calling an "intrinsic" account); and by those who criticise both inferential and intrinsic accounts. For the most part, then, I leave general criticism of inferential accounts, and scientific criticism that pits empirical evidence against empirical evidence, up to these critics. The current scientific tradition of the intrinsic account begins with J.J. Gibson, continues with his followers in the field of ecological psychology, and is picked up in various current research programs from dynamic systems theory to theories of robotics; for the purposes of this brief discussion, I will bring these accounts together as belonging to the 'Gibsonian tradition,' and call researchers in the tradition 'Gibsonians.'⁶

⁵ Thompson, Varela and Palacios 1992 and Thompson 1995.

⁶ See J.J. Gibson 1950 and J.J. Gibson 1979 for Gibson's own articulation of his research program in ecological psychology and criticisms of non-direct (inferential) accounts of perception. See, e.g., Turvey and Shaw 1979; Turvey 1992b; Kugler, Shaw, Vicente, Kinsella-Shaw 1991; Thelen and Smith 1994; and Neisser 1976 for accounts of Gibson's ecological psychology and criticisms of inferential and representational accounts; the first four of these sources also give general accounts of attempts to extend ecological psychology using the principles of dynamic systems theory. See, e.g., Brooks 1991 for an argument about how these sorts of principles apply to robotics and artificial intelligence.

Note that my distinction between intrinsic and inferential accounts, as I have described it in the last few paragraphs also parallels the distinction made by Turvey, Shaw et. al. between holonomic and nonholonomic accounts. Roughly put, this is a distinction between accounts in which behaviour is accounted for by basic laws that apply to organism and environment at a natural level, and accounts in which behaviour is accounted for by rules that are carried out by mechanisms that abide by the aforementioned basic laws; for example, a thermostat's behaviour is holonomic, whereas a computer

The basic argument of the Gibsonian tradition is that organisms do not represent their environment. The very structure of organisms in their interaction with the environment already forms information into “invariants” that are directly available in sensation and that capture significant information about the environment. (In dynamics system theory, the role of “invariants” is filled by attractors in the state space of the dynamic system, which attractors constrain and thus govern the behaviour of the system. “Attractors in state space” are repeating patterns within the space of possible behaviours of a system; for example, if we plot the position and velocity of the pendulum of a grandfather clock on a two axis graph, we will find that the plot describes a closed path which defines the behaviour toward which the system is “attracted.”) So sensation is already internally informed as perception of the environment. Specifically, certain affordances (in Gibson’s terminology), i.e., supports for behaviour, open up in the environment for an organism in relation to the possibilities opened by the organism’s body and its motor-perceptual powers. The dynamic relation between the organism’s possibilities and what the environment affords these possibilities, structures invariants in the information that the organism collects from the ambient environment in a given motor-perceptual activity. It is these invariants that let the organism perceive the environment. Thus the organism is active in forming the information that lets it perceive, and its bodily relation to the environment is integral to the formation of this information.

For example, when moving forward across the ground, the very same features that afford a locomotory surface for our motor powers afford a visual layout to our perceptual powers. When we move forward, points in the centre of this visual layout stream outward

controlled climate control system is nonholonomic because it depends on rules that represent the

from the centre, and texture gradients formed by the ground as it recedes from us move down the visual field, just because of the way that our bodies and sensory organs physically interact with the natural environment. These dynamic flows of ambient information, which are informed by our motor-perceptual activity, form information invariants that we “pick up,” and that signify forward-motion-in-the-environment (I hyphenate this phrase to capture the Gibsonian claim that the organism and environment are inseparably coupled and that each piece of information signifies both states of the organism and states of the environment).⁷

States of the environment, then, are not recovered by rule based processing of sensory information, because our motor-perceptual interaction with the environment is already a ‘processing’ that invests sensation with information about the environment. Thoroughgoing Gibsonians might want to argue that information about the environment is not “recovered” at all, because information is not “there” as information without the motor-perceptual activity of the organism; but the ontological status of information is a bit confused in many Gibsonian accounts.

In the Gibsonian account, we see a new version of a Berkeleian ‘language’ of sense: we do not need inferential models or information processing to map from sensation to the environment. The very form in which sensation is presented to us already gives sensation a meaningful ‘grammar’ in which sensations bind into significant wholes, informational invariants, that are our interest in perception, so we never experience sensation, only perception (on this point there are subtle differences between the Gibsonian and

environment. (Cf., e.g., Kugler, Shaw, Vicente and Kinsella-Shaw 1991; Turvey 1992b)

Berkeleyan account).⁸ That is, when we deal with things around us, we do not directly deal with anything ‘behind’ these significant wholes (unless they happen to materially coincide with things, as in taste)—all our dealings with the environment are interactions mediated by these information invariants. But because of natural laws of the ecology—laws that relate organisms to the environment—these information invariants intrinsically capture information about the environment ‘behind’ these significant wholes, since they are causally related to the environment—information invariants are, as it were, representatives of the environment as it appears to us.⁹ In the Gibsonian tradition, then, the Author of the language of sense, God, is replaced by an internal formation of sensation that emerges from the *physical* interaction of the organism and the environment, and the work of human mind is replaced by the physical interaction of organism and environment. The fact that this physical interaction is successful in forming information invariants that let organisms deal with the environment as it is in itself, as a natural causal system, is attributed to evolutionary processes.

In the end, then, the accounts given by the Gibsonian tradition suffer from a criticism that is cognate to my criticism of Berkeley’s account. In Gibsonian accounts the ‘language of sense’—the system that organises sensation into wholes that have a self-evident meaning—is in a certain respect external to the life of the organism. To put it in

⁷ For a Gibsonian account of perception of self-motion, see Gibson 1979; also see Warren 1995 and Wertheim 1994.

⁸ Cf. Schwartz for another discussion of Berkeley and Gibson. Gibson’s own discussions of Berkeley do not do justice to Berkeley’s philosophy.

⁹ Given this sort of description, another way to think of the Gibsonian tradition is as a revitalisation of the Aristotelian and scholastic doctrine of intentional forms, only the forms in the Gibsonian account— invariants, or attractors in dynamic systems—are not specified by final or formal causes. The Gibsonian tradition would then stand against Descartes’s criticism of the scholastic doctrine, against his attempt to

the terms of some researchers in the Gibsonian tradition, their concern is to give a *physical* theory of information, to give a theory in which information and intentionality are described in terms of the same *sorts* of laws as those used to describe less complex systems. Even if Gibsonians do not try to reduce biology and intentionality to simple physics, for example, by saying that the behaviour of biological and intentional systems is specifiable in terms of the *particular* sorts of entities and laws of motion that would let us specify the behaviour of inanimate objects, they try to show how a similar sort of *lawfulness* applies to inanimate, biological and intentional systems; and in doing so they come up with a very interesting new sort of physics, which could variously be described as an ecological physics or a theory of dynamic systems, a physics that describes behaviours of overall interactions within systems that encompass organisms and their environment.¹⁰ Picking up on some remarks by Turvey, this move expands the approach of Gestalt theorists by rooting *Gestalten* in laws that range over interactions between the organism and the environment, in contrast to Gestalt theorists who root *Gestalten* in laws of the organism and its organs only.¹¹ Again, Gibsonians try and conceive the notion of prospective control—anticipatoriness—in terms of a realism conceived in terms of law,

eliminate all images from the world outside of mind—images, invariants, arise naturally, because information is physical, according to the Gibsonians.

¹⁰ See, e.g., Turvey's opening remarks about forms of reductionism in Turvey 1992b; and Kugler, Shaw, Vicente, Kinsella-Shaw 1991. Another way to put this point is that scientists in the Gibsonian tradition are interested in giving holonomic (see note 6) accounts of biological and intentional phenomena, in which overall laws are essentially the same in their universal structure, whether we are describing living or non-living phenomena, even if the particulars of these laws are different. The methodological issues that are pointed out in the aforementioned articles are readily apparent in the literature of ecological psychology and dynamic systems theory.

¹¹ See Turvey 1992b, 110-112.

which in Merleau-Ponty's terms would collapse the vital order to the physical order.¹² But in any case, by rooting information invariants in lawful behaviour in the physical world—no matter how complicated this lawfulness is, no matter that it requires a new sort of physics, no matter how many times members of the Gibsonian tradition claim that they are working against dualisms that separate the organism from the environment, or that they take causality to be circular, so that high level behaviour informs lower level states of living systems—the Gibsonian tradition describes biological and intentional life as being rooted in an externality, in physics; it tries to account for the complexity of the 'first person' activity by giving a more complex and holistic account of 'third person' physical processes.¹³ (See my criticism of Turvey et. al.'s account of haptic distance perception that I give on page 99 above for a particular case of this criticism, as well as my criticisms of Turvey and Carello on page 135 and J.J. Gibson on page 190 in chapter two below.) Put another way, Merleau-Ponty's effort in *The Structure of Behaviour* is to show that different orders of being must be accounted for in different ways—laws

¹² See Turvey's (1992a) proposal for an ontology for affordances and prospective control, and the Heideggerian response of Kadar and Effken (1994), which urges that intentionality is needed to get past the problems that motivate Turvey's ontology. Also see Heft 1989.

¹³ In being eager to show how third person processes constitute dynamical systems that report on themselves in the first person, the overall program, then, is similar to that of the inferential tradition, for example, to the sort of program described by Dennett (1991). This is the move that I am criticising. But this is not to say that the results of research in this tradition are useless to phenomenology, far from it. Their research could very well give a better account of that contingency in which our experience is rooted. If we were to take up their account, the Gibsonian tradition would give us a new description of the physics of what Merleau-Ponty calls the vital order. This description would show how the internal shaping of our being in the world depends on an embodiment that is constrained by the sort of ecological physics derived by the Gibsonian tradition. But if we were to show how this dependence on ecological physics is significant to our being in the world, we could never abstract from the fact that our being in the world is a transcending that is, in its very being, an attempt to be a law unto itself through its relation to the world. Being in the world is not governed by physics, no matter how complex. Unpacking this particular issue, which concerns the relationship between science and phenomenology, would, to my mind, profit from a careful study of the relations between *SdC* and *PdIP* on the subject of fields and structures, and from a study of Hegel's *Science of Logic* in the context of a philosophical investigation of the notions of law invoked in the Gibsonian tradition.

account for the physical order, norms for the vital order, and meaning for the human order—and to criticise the notion of *Gestalten* as a notion that ultimately subsumes the vital and human order to the physical order. The accounts offered by the Gibsonian tradition thus fall to the criticisms that Merleau-Ponty develops in *The Structure of Behaviour*, since the Gibsonian tradition still subsumes the vital and human order to the physical order, even if it gives the physical order a more complex description that interrelates organism and environment; even more so does the Gibsonian tradition fall to the criticisms that Merleau-Ponty develops in his accounts of being in the world in the *Phenomenology of Perception*.¹⁴

The above is the most important criticism of the Gibsonian tradition from the point of view of this work: the Gibsonian tradition still roots perception in a ‘language’ that is external to our *transcending* embodiment as beings in the world, even if it makes this language immanent within the *physical* dynamics of our motor-perceptual relation to the environment. Perhaps a Gibsonian account might do in giving us a better account of non-human living beings. But we need an account of the internal shaping of human being in the world, not an account that roots our perception in the external nature of the body *qua* biological system, no matter how complex the account.

A related criticism follows from this point: to the extent that the Gibsonian tradition seeks to root biology and intentionality in physical descriptions, and to the extent that it ultimately explains biological and intentional systems in evolutionary terms—to the extent that the natural environment lurks behind invariants—the questions that the

¹⁴ On the development of the criticism of Gestalt from *SdC* to *PdIP*, see Madison 1981, chapter 1. See Sanders 1993 for a discussion of how Merleau-Ponty’s ontology goes further than Gibson’s

Gibsonian seeks to answer are ultimately shaped by a concern for physical descriptions that are specified external to biological and intentional interests. For example, for the Gibsonian, the question of the development of infant walking is a question about how a certain bio-mechanical motion arises in the dynamics of body-environment system formed by the infant, not a question about how a certain behaviour arises in a human being in a human world; this fails to recognise that human processes such as learning to walk are shaped by cultural practices, that human bodies develop within a human world.¹⁵ In making such moves, the Gibsonian tradition breaks the subject from the object, even if it claims that the subject and object, and organism and environment are insuperably coupled; it does so since it specifies problems of the organism outside of the organism-environment relation, or in this case, problems of the human being outside of the human-world relation. This particular sort of deficiency in Gibsonian accounts, I would claim, is symptomatic of the inability of the Gibsonian tradition to think the interrelation of the organism and environment down to its roots, or to see how transcending behaviours permeate these roots; and this inability is not too surprising, given the ontology of the modern scientific tradition. This sort of fault—a fault at the ontological level—is well criticised by Thompson in his works on colour.¹⁶

In short, I would claim that the Gibsonian tradition has the right intuitions about a successful account of perception and cognition, but it does not have the ontology or the philosophical resources to bring those intuitions to fruition. *The Gibsonian tradition just*

psychology; I would contend that a critical discussion of Gibson would show that the differences between Merleau-Ponty and Gibson are stronger than those suggested by Sanders.

¹⁵ See Zelazo 1983 and Zelazo 1984 for a discussion of this issue. Also see my discussion of the development of walking in the conclusion of this work.

institutes a more complicated interrelation between cues and represented dimensions by making the language of cues immanent within the physics of organism-environment interactions. But so far as this interaction is ultimately conceived in terms of causal relations that are defined independently of the organism, the language of cues is in the end external to the organism, and information invariants represent dimensions external to the organism, they represent dimensions whose veracity is referred to the environment in itself. The Gibsonian tradition cannot make the ontological shift that I remarked in the beginning of section three of this chapter. This is one reason why I am working from Merleau-Ponty, who has his roots in an existential-phenomenological tradition that is shaped by the thought of Hegel and Heidegger, who both work to develop conceptions of identity and difference that are ontologically adequate to grasping the relations of human beings and their world (and also organisms and their environment); and it is the reason why my concern in this work is ultimately ontological and philosophical.

Finally, I should also point out a conceptual problem within the Gibsonian account: the tradition argues that we pick up information invariants from the sensations given us. But this requires a move from information—no matter how intrinsic meaning is within the information—to some sort of condition in which this information is meaningfully *about* the world *for* the organism, and this move requires explanation. Dennett would say that here we have a homunculus that needs explaining; Descartes would say that we would need “yet other eyes” in the brain with which to perceive these invariants.¹⁷ This, I

¹⁶ Thompson 1995, and Thompson, Palacios, Varela 1992.

¹⁷ *Optics*, Discourse VI, AT:130; cf. *OE* section III.

think, is one of the motivations behind Ullman's criticism of the Gibsonian tradition.¹⁸

Dynamic systems theory may go some way to answering this criticism, by reducing 'about-ness' and 'for-ness' to a manifestation of the behaviour of a system, which behaviour is specified in the attractors of the system; we do not require anything behind behaviour *for* which information would be information *about* the environment; but then the criticisms that Merleau-Ponty develops so thoroughly in the *Phenomenology of Perception* come into play, if our interest is to give an account of human experience.

¹⁸ Ullman 1980, esp. 379-381.

Chapter 2

The Body Schema, Habit, Perception and Depth

The study of depth and spatial perception in chapter one argued that we could only give an account of the meaningful and labile phenomena of depth if depth perception is determined by motivational relations within the phenomenal field. In Merleau-Ponty's account, these motivational relations are shaped by our embodied relation to the world. Cue-dimensional models of perception claim that depth perception recovers determinations of dimensions that are external to the perceiver, from cues given to the perceiver. In this case the perceiver is a consciousness that is merely *in* an external space in the way that something is in a container, or a node is in a system of relations, and the only connection between consciousness and the dimensions of space is encoding or signifying cues. Against such cue-dimensional models, Merleau-Ponty's study of perception shows that we must sense space through the anticipatoriness of our grasping bodies, and it is our grasp of things that expresses the sense of space for us. We sense space in virtue of being embodied beings in the world who are *of* space.

In this chapter, my study of embodiment and perception will show how our anticipatory grasp of things already spatially relates us to things in a pre-objective manner. This pre-objective relation shapes our embodiment so as to constitute a medium of being in the world that has a "primordial depth." This primordial depth belongs to bodily space, and I will show how bodily space is a place for things. It is the way that

things occupy place in bodily space that motivates our perception of things in an objective depth, given that we are related to things within a larger place that holds us together with things.

I approach this study through a discussion of the *body schema*, a principle of our lived body that shapes our anticipatory, pre-objective motor-perceptual intentionality toward things. I show how the body schema is crucial to Merleau-Ponty's theory of perception, by way of explaining how for Merleau-Ponty "The theory of the body is, implicitly, a theory of perception."¹ A crucial point in the theory of perception that emerges is that perception is a motor-perceptual synthesis shaped by the body schema; and every perceptual synthesis is in fact a co-synthesis, in which the unity of the thing and the unity of motor-perceptual organs of the lived body are given at once in relation to each other. Thus the unity of the thing reflects the unity of the lived body. This claim grounds a discussion of the unity of things in binocular vision, in which I show how binocular vision is a motivated phenomenon. I then formulate some more general claims about the way that the unification of things in motor-perceptual activity places them in relation to the body. This lets me show how bodily space and primordial depth emerge within motor-perceptual syntheses that are shaped by the body schema. In turn, this lets me: give an account of how we perceive things in depth; show how our bodies are *of* space; and explain what we mean when we talk about the motivational shaping of the phenomenal field with respect to depth. The account that I develop thus lets me show how our bodily, motor-perceptual activity makes sense of space.

¹ *PdIP* 239, *PP* 206.

But the account that I develop depends on the fact that our motor-perceptual relation to things is grounded in a larger place, and the account does not yet explain the lability and meaningfulness of spatial perception. (The latter two issues were discussed in chapter one.) In order to deal with all three of these issues, I study the connection between the body schema and habit. The acquisition of a habit is, as Merleau-Ponty puts it, a renewal and rearrangement of the body schema, and I show how we can conceive the body schema as a primordial habit of the lived body, a habit that develops dialectically in our encounters with the world. The study of habit thus shows how the body schema is labile and how its shapings of motor-perceptual life are continuous with broader realms of habit, in virtue of which the perceived world already has human meaning. The study also lets me show how the body schema lets us “dilate our being in the world,” changing our existence “by appropriating fresh instruments” into the lived body.² This lets me suggest that the larger places that we are in can become incorporated into the lived body as ‘world-instruments’ of our being in the world.

One important framing limitation must be noted at the outset. In order to engage with traditional accounts of spatial perception and have a manageable project, my discussion in this chapter focuses on our spatial perception of things, not our spatial perception of other human beings or other animate beings. In Merleau-Ponty’s phenomenology, perception of other human beings and animate beings is fundamentally different than perception of things, and this would hold of spatial perception as well. But my discussion in this chapter conceives the body schema that shapes spatial perception as a developmental, primordial habit. In the conclusion of the work, this will let me suggest

² Cf. *PdIP* 168, *PP* 143.

that our encounters with other human beings, which are crucial to the development of our body schema, are in fact formative of and prior to our spatial encounters with things.

In addition to advancing my overall study of spatial perception, the studies in this chapter will let me do several things with respect to the *Phenomenology of Perception* and literature on Merleau-Ponty. I link Merleau-Ponty's analysis of the body schema and his account of perception by drawing some textual connections in the *Phenomenology* between Merleau-Ponty's claims in the chapters "The Spatiality of the Body Itself, and Motility," "The Synthesis of the Body Itself," "The Theory of the Body is Already a Theory of Perception," and "Sense Experience." I also link Merleau-Ponty's study of the illusion of the double marble to his study of diplopia; link his discussions of body schema and habit; and link his discussion of habit and instruments of the body to his discussion of changes in colour vision. As commentators have pointed out, the *Phenomenology* is woven together out of many strands that repeatedly emerge and submerge, and here I try to draw out several of these strands.

My study of the body schema and perception also contextualises Merleau-Ponty's theory of the body schema against current results, and leads me to suggest a corrective to Gallagher's discussions of the body schema. My study of bodily space and primordial depth, which interprets these concepts in terms of motor-perceptual syntheses and the body schema, engages me in a discussion of Casey's study of Merleau-Ponty on depth, and lets me make a contribution to Casey's account of the body's relation to place and space.³ It is through Casey's work that I link spatial perception with the issue of place.

³ See Casey 1991a and 1993.

The Body Schema

To begin my discussion of the body schema and to foreshadow the ontology of embodiment that will emerge, I will return to Proust's description of the slumbering body of the narrator in the "Overture" of *Remembrance of Things Past*. In Proust's description, the twists and turns of the narrator's sleeping limbs bring childhood spaces to life:

And even before my brain, lingering in cogitation over when things had happened and what they had looked like, had reassembled the circumstances sufficiently to identify the room, it, my body, would recall from each room in succession the style of the bed, the position of the doors.... The stiffened side on which I lay would, for instance, in trying to fix its position, imagine itself to be lying face to the wall in a bed with a big canopy... (6)

The identity of the narrator's body stretches into and is built up through the narrator's past. Although Proust's description concerns dreamlike memory, rather than present perceptual experience, the *sort* of bodily being that he describes is, I think, the same sort of being within which Merleau-Ponty discovers the body schema that shapes perceptual experience. It is not the brain or thought that revives past space; rather, the narrator's embodied activity calls up the past within the slumbering body of *this* narrator, which body is a "faithful guardian" of a meaningful past, not a mere collection of present limbs.⁴ Likewise, for Merleau-Ponty, perception cannot be reduced to intellect or the biological body; perception is called up by a present whose meaning is shaped by the body schema, and the body schema is temporal, which means that perception is sustained in a body that has a past and a situation, a body that is always already the 'faithful guardian' of an anticipated way of being in the world, not a mere collection of parts. Roughly put, the body schema is the apparent kernel of a primordial power in virtue of which the lived body is a self-constituting, anticipatory being in the world; and this primordial power and

the body schema are to be understood in terms of *habit*, where habit is the faithful guarding of past body schemas. The crucial ontological point anticipated by Proust's description is that the lived body with its body schema and habits cannot be reduced to a causal process and neither can it be reduced to an intellectual or symbolic process that is distinct from embodied existence; the body schema is a primordial *habit* and thus belongs to a different ontological category, which Merleau-Ponty, following those in the Heideggerian tradition, calls being in the world.⁵

⁴ See Proust 1983, 6.

⁵ Within Heideggerian philosophy itself, an important distinction is drawn between "being-in-the-world," the way of being or structure of Dasein in general, and "a being in the world," a singular Dasein. In the context of Merleau-Ponty's philosophy of perception and embodiment, I am not convinced that this distinction—and Heidegger's related ontological difference between Being and beings—operates in the same manner as in Heidegger's philosophy.

Merleau-Ponty himself, as far as I can tell, does not explicitly mark such a distinction with his usage of "*être au monde*" in *PdIP*. He only uses the hyphenated form once, when he makes a direct reference to *Being and Time* in his chapter on temporality. He speaks of "*être au monde*" in general in many places and also of "*les structures de l'être au monde*" (339); but he also speaks of "*mon être au monde*" (210, 243, 434, 504) and "*notre être au monde*" (168, 220, 501, 512) in such a way as to refer to an "*être au monde*" that has an individual temporal history and development. In his study of the development of Merleau-Ponty, Geraets remarks that Merleau-Ponty appears to have studied Heidegger above all with a view to, and probably very late, in the drafting of his chapter on time (Geraets 1971, n 314, p 133).

Given the above, and my conviction that there is a complex relation between being-in-the-world as 'structure' and being in the world as historical individual in *PdIP*, I will use the un-hyphenated "being in the world" throughout, to refer both to singular perceivers and the overall shape of their manner of being; in this respect I follow the practice, for example, of Madison (1981), who uses the un-hyphenated form in both the English and French editions of his work. Smith's translation uses both hyphenated and unhyphenated forms in no discernible pattern. Further treatment of this issue would require a separate philosophical discussion. Many thanks to Graeme Nicholson for emphasising the importance of this issue, and for our deep discussions of the philosophical issues behind this matter.

Clearing up this issue would require a careful historical, textual and above all philosophical analysis of Merleau-Ponty's usage of the term. (My claims are supported by an electronic search of the text. The following is a list of the occurrences of the un-hyphenated phrase "*être au monde*" in *PdIP*. The list is generated from a search on the French edition, which is available online from the ARTFL Project. The American and French Research on the Treasury of the French Language (ARTFL) Project is an electronic version of a collection of French texts compiled by the French government. The collection is used for lexicographical research; fortunately for us, *PdIP* was selected as a sample text; ARTFL is accessible at <http://humanities.uchicago.edu/ARTFL/ARTFL.html>. I have cross referenced the list to the English translation. Each reference is in the form "French page number/English page number," and I have starred references where Smith uses hyphens in his translation: viii/xiii*; 67/55*; 93/78*; 93/78*; 95/79*; 95/80* (twice); 97/81*; 97/82; 97/82; 99/83; 168/143*; 186/159; 210/181; 217/186; 220/188; 243/210; 245/212; 270/234; 339/293; 395/343; 404/351; 409/356 (Smith translates as "belonging to the world"); 414/361 (Smith translates as "being in and of the world"); 434/379; 452/395*; 461/403; 491/430*; 494/432; 496/434; 501/438 (twice); 504/441 (thrice); 506/443; 512/448. Smith also hyphenates his translation of

Let me begin a more detailed description of the body schema by taking a closer look at the tossing and turning of the body in sleep. (My reasons for using the case of sleep as an initial example are noted below, page 128)

When I toss and turn in sleep, I am not *explicitly* aware of my motions or the spatial configuration of my body—everyday space dissipates in sleep to be replaced by “seeling night” and by the pressing space of dreams. But it is clear that during my life I have built up habits of sleeping that keep me from rolling out of bed, even if I am travelling and sleeping in a different size bed for one night, although I fell out of my own bed several times as a child. And in the morning I usually know roughly where I am and where my body is in relation to the bed and room, even before opening my eyes.

There is, then, a dynamic, determinate formula for the rite of sleep, even if its determinacy vanishes from my experience. I only have to initiate the rite and my body composes itself according to some habit that retires me into sleep and guides me safely to the morning.⁶ It is clear that the rites of sleep are related to my situation and my past in ways that I can only partially specify, and this only by reflecting on past experience: conventions for orienting myself in bed that I did not follow as an infant who drifted across all points of the compass; the layout of the rooms that I slept in as a child; my current health and the state of my body; the feel of my clothes; the residue of the day; self-conscious reflection on falling asleep or not falling asleep, and so on—all these shape the rites of sleep. But even though it has a determinate, dynamic interrelation with my situation, it would be wrong to say that the rite of sleep depends on my intellectual

“L’Être Pour Soi et L’Être au Monde,” the title of the third part of *PdIP*, which appears un-hyphenated in the text of *PdIP* (420), but hyphenated in the *Table des Matières* of *PdIP*.)

knowledge of my situation, or even to say that my body ‘*knows*’ how to conduct the rite in relation to ‘its *knowledge*’ of my situation.

This is emphasised by contrast with disturbances of sleep. When I have injured a limb or my back hurts, or when I am sick, the arrangement of my body becomes a more precise and objective issue for me, even though it never comes down to objective angles of limbs and bed. In such cases the strange and elemental discomfort of sleeping in the ‘wrong’ position, of having to think about the position of my body and having to ‘intercept’ my urges to turn over, only emphasises the fact that in my usual sleeping rites I do not have to *know* about any of these issues or deal with them according to their third person determinations, and that my body’s ‘practical knowledge’ of sleep is due to urges that are beneath the body that I explicitly control—this ‘practical knowledge’ is given in habit.

A more striking contrast is given in Cole and Paillard’s recent account of I.W. and G.L., who have suffered unexplained neuropathies that destroyed nerves sensitive to touch and the stretching of muscles. For the most part I.W. and G.L. rely on sight to locate parts of their bodies, and so both sleep with the light on. I.W. has to think strategically about how to sleep.⁷ Moreover:

⁶ Cf. Merleau-Ponty’s remarks about sleep, *PdIP* 245, *PP* 211-212.

⁷ “For instance, [I.W.] slept on his back, or slightly to one side. To lie on his front was difficult, because he could not see his body, and if he could not see it he could not move it. If he lay on his side he ran the risk of lying on an arm and not feeling it at first and then not being able to move it.” (Cole 1995, 84)

This is not to say that I.W. only has an objective, intellectual relation to the world and his body, far from it. I.W. has a primordial relation to the world that cannot be torn from him by his disease, that does not depend on explicit objective and intellectual operations—he, for example, has sensations of temperature, pain and tiredness of limbs, but more important, he still, of course, identifies himself with the projects that he carries out with his body. It is just that his body below his neck must become an explicit *object* of intellectual reflection for I.W., especially during sleep or other potentially dangerous activities. Yet I.W.’s body as a whole is still his *own* body.

I.W. claims that he has to wake up to think about turning over during the night, whereas G.L. reports that she turns spontaneously and changes position while sleeping. She does need light in the room, however, to visually control the actual position of her body in the bed when awakening. Preserved small sensory fiber signalling the lack of blood skin irrigation, which results from prolonged maintained position, may trigger reflex changes of body position in G.L. during sleep, while they apparently awaken I.W. (Cole and Paillard 1995, 250)

I.W. must deal with the body and the bed in their *objective* determinacy, and he seemingly explicitly responds to certain nerve signals that for the normal person, and even for G.L., are an undifferentiated part of spontaneous sleep behaviours. For I.W., moving his body in bed is to a large extent an intellectual operation that depends on explicit *knowledge* of his body as *object*.⁸

These sleep phenomena indicate that at heart our bodies, in the normal case, have a determinate involvement with the world that is not mediated by conscious reflection, deliberate motor-perceptual behaviour, or knowledge or awareness of our bodies or things *qua* objects. In sleep we are involved with the world, without our needing to explicitly engage in behaviour that *makes* us be involved. There must be some account of what it is that makes such an involvement possible. This account, I argue, is to be found in the concept of the *body schema*.

Head introduces the concept of the body schema in his discussion of problems concerning our 'knowledge' of the location of body parts, problems akin to the ones that we found in the case of sleep. According to Head, the body schema is a plastic model of our posture. This model runs behind conscious life, recording postures and movements in order that "Every identifiable change reaches consciousness already loaded with its

⁸ I.W. locates his body by watching how the bedsheets move when he moves limbs, listening for noises from limbs bumping into things, or by detecting changes in temperature that result from limbs sticking out from under sheets. He *knows* his arm is away from his body when his armpit feels cold. (Cf. Cole 1995, 84-85.) Cf. descriptions of I.W.'s detailed knowledge of the floor of his office, required for his navigation of his office (Cole 1995, 115).

relations to what has preceded it, as on a taximeter the distance is given already converted into shillings and pence.”⁹ The central feature of Head’s account is that work is done behind the scenes in order to maintain a model that eventually allows an awareness of the body to rise into conscious life and explicit awareness; a similar claim lies behind many recent accounts of the body schema. Head’s account stands in contrast to Schilder’s discussion of the body schema (which Schilder also, and more appropriately, given his claims, calls the body image), in which the schema also seems to be a conscious image of the body that enters into the psychological dimension of life.¹⁰ Both of these accounts require the equivalent of conscious, objective awareness of the body and things in the world *qua* objects, even if this consciousness may be hidden.

I follow Merleau-Ponty in claiming that there is a body schema, but that the body schema could not be a representational, objective or conscious function of the body or mind. What I will do next is explore Merleau-Ponty’s own discussion of the body schema, in order to show that there is a body schema, and that it is a principle of our embodiment—of our being in the world—that gives us the power of having a pre-objective relation to the world. But before I begin, I need to make several remarks.

First, it is the body schema, not the body image, that I am interested in. (Here, in the first instance, I follow Gallagher’s distinction between these terms.¹¹) I am interested in

⁹ See Head 1920; the quote is from Head and Holmes, *Sensory Disturbances from Cerebral Lesions*, cited at *PdIP* 164, *PP* 140.

¹⁰ See Schilder 1935.

¹¹ See Gallagher 1995 and 1986a, as well as Gallagher’s other articles on the body schema for a discussion of the distinction between the body image and the body schema, an attempt to situate these concepts in relation to Merleau-Ponty’s phenomenology, and for an overview of the history of these concepts. Below I will make some critical remarks regarding Gallagher’s position. Also see Tiemersma’s (1982) review of the history of the concept of the body schema and its appearance in Merleau-Ponty’s

the body schema, *qua* non-representational, non-conscious, non-physiological shaping of our being in the world that accounts for our unconscious, unthematized, always available involvement with the world. The body image, in contrast, gives us a representation of our bodies. I am interested in the body schema because, according to Merleau-Ponty, it shapes perception.

Second, a word on translation. Although he is not consistent, for the most part Smith translates “*schéma corporel*” as “body *image*” rather than “body *schema*.” On my understanding the body schema accounts for the fact that we are always involved with the world, which is to say that our involvement is prior to imagery and objective dealings with the world. So it makes little sense to translate “*schéma corporel*” as “body image” if we are interested in coming to a better understanding of this involvement. And on my understanding, many of the claims that Merleau-Ponty makes about the “*schéma corporel*” make little sense if he is referring to representations of our bodies. For these reasons and in light of the points that Gallagher makes about translation of this term, it would be better to translate Merleau-Ponty’s “*schéma corporel*” as “body schema.”¹² Finally, a tacit aim of this chapter is to show how Merleau-Ponty’s conception of the body schema is an ‘existential’ reformulation of the notions of the *a priori* and synthesis that are found in philosophy after Kant; in this respect it would be important to understand the *body schema* in relation to issues surrounding *schemata*—mediating structures between the *a priori* and the *a posteriori*—in Kant’s philosophy and after. I

philosophy. For other discussions of the body schema see the various essays in *The Body and the Self*, the volume in which Gallagher 1995 is found (Bermúdez, Marcel and Eilan 1995). Also cf. articles in Eilan, McCarthy and Brewer 1993. Stein 1991 includes (amongst some dubious claims about philosophers) a brief history of scientific discussion of the body schema.

will not be able to pursue this topic here, but I think it is important to flag this connection by translating “*schéma corporel*” as “body *schema*.”¹³

Third, we need to shift from the world of the sleeping to that of waking. I hope this satisfies the possible objection that the case of sleep is a poor example from which to draw conclusions about waking perceptual life, since in sleep we have a peculiar relation to ourselves and things around us, a relation that we think of as more or less ‘autonomic,’ as being prior to objective relations to things, and as being freighted by meanings divined within dreams. In fact, it is because of this peculiarity that I chose sleep as an example—sleep itself ‘reduces’ the usual objective relations that we have to things and ourselves, making it easier to see our pre-objective relation to ourselves and the world.

To Merleau-Ponty’s account of the body schema, then, beginning with some of Merleau-Ponty’s observations about the lived body and being in the world.

In “The Spatiality of the Body Itself, and Motility” in the *Phenomenology of Perception*, where Merleau-Ponty gives his main account of the body schema, Merleau-Ponty notes that there is much that is given as implicit and pre-objective in our experience of the body in relation to itself and to the world of things. For example, my lived body is not a system of parts external to one another in space—a signal feature of a mechanism—and I do not relate to my body as if to a foreign object; rather, my lived

¹² Cf. Gallagher’s comments on the issue of Smith’s translation and Merleau-Ponty’s terminology, esp. in Gallagher 1995, Gallagher 1986a and Gallagher and Meltzoff 1996.

¹³ For some broad suggestions about how Merleau-Ponty’s concept of the body schema fits within the tradition of transcendental philosophy from Kant through Husserl, see Gans 1982. For a discussion of Merleau-Ponty that places him within the tradition of transcendental philosophy, and shows how his theory of “incarnated intentionality” amounts to a new sort of synthesis, see Langan 1996, esp. chaps. 1 and 2; also see Dillon 1987. Merleau-Ponty’s theory of the body schema and perception does in fact give Merleau-Ponty the “entirely different sort of synthesis” that he demands against Kant’s notion of synthesis, for example, at *PdIP* 282, *PP* 244, and *PdIP* 252-256, *PP* 218-222.

body is already given to me as an internally related system that is involved with things in the world.¹⁴ In waking life—as in sleep—I already perceive ‘where’ my limbs are without having to take up an objective relation to my body; without knowing how or without feeling myself explicitly ‘sequencing’ the individual motions involved, I can move my limbs to where they need to be. The location of my limbs is an implicit background of the activities that I am involved in. To give one of Merleau-Ponty’s examples, when I lean on the desk with my hands, “only my hands are stressed and the whole of my body trails behind them like the tail of a comet”; the position of my back and shoulders is “swallowed up in the position of my hands”¹⁵ (just as the determinate position of limbs is swallowed up in the rites of sleep). As Merleau-Ponty puts it, the spatiality of the lived body is not a spatiality of position, but a *spatiality of situation*; the internal relations that shape my lived body and my experience of it are shaped by my involvement with things.¹⁶ Moreover, this shaping of the lived body is preserved in disturbances such as allocheiria, in which stimulation of the left hand is felt in the right hand—the hand retains its identity as hand, despite the displacement and mirror inversion that are necessary to conceive the condition from the third person point of view.¹⁷

The fact that there is such an internal, situational shaping of the lived body that persists through disturbances means that the implicitness of the position of my limbs

¹⁴ *PdIP* 114, *PP* 98.

¹⁵ *PdIP* 116, *PP* 100.

¹⁶ For a discussion of situations and their importance to Merleau-Ponty’s philosophy, see Mallin 1979. Mallin conceives situations as having an ontological priority crucial to Merleau-Ponty’s philosophy, and Mallin relates situations and their logic to ontological structures of being. I would like to emphasise how situationality arises from the necessary contingencies of embodiment and perceptual life, and thereby add depth to the sort of Heideggerian ontological structures that Mallin elucidates through Merleau-Ponty.

could not merely be immediate, a being in itself that is the final result of a passive process. My lived body *anticipates* a certain shaping of the lived body in the world, and the lived body's sense of itself is given against this anticipatory shaping. This anticipatoriness reflects Merleau-Ponty's conclusions in "The Body as Object and Mechanistic Physiology" and "The Experience of the Body and Classical Psychology," where Merleau-Ponty shows that the lived body is not an object amongst others, since it is our locus of being in the world, it is a metaphysically necessary, habitual perspective on the world, and is laden with meaning.¹⁸ Phenomena such as the phantom limb and anosognosia show that the lived body's identity is not to be conceived from the third person perspective of biology, since what counts as the lived body *for us* is dependent on our way of being in the world, and so the way in which parts of the world count or do not count as body will turn out to depend on our habits of being in the world.¹⁹ Even at an organic level, the body cannot be reduced to a mechanism that is specifiable independent of the organism's living goals, since, for example, organisms try to adapt themselves to carrying out their goals if their organic structure is disrupted, and reflexes and senses show themselves as anticipating stimuli and investing them with meaning.²⁰ Moreover, as

¹⁷ *PdlP* 114-115, *PP* 98-99.

¹⁸ For the metaphysical necessity of this habit and perspective on the world, cf. *PdlP* 107, *PP* 91. For discussions of Merleau-Ponty's argument concerning the lived body and being in the world as body subject (as well the case of Schneider and other disturbances), see the first two chapters of Kwant 1963; chapter one, esp. section two, of Madison 1981; Dillon 1974; Dillon 1988, chapter 8, in which Dillon discusses Schneider's disturbances in relation to bodily space. Also see Gallagher 1986c.

¹⁹ On the phantom limb and anosognosia, of which more later, see *PdlP* "The Body as Object and Mechanistic Psychology" and "The Experience of the Body and Classical Psychology," especially the section "'Organic Repression' and the Body as an Innate Complex" in the former chapter.

²⁰ Cf. *PdlP* 92-95, *PP* 77-80 and parts I and II of *SdC*. On this point about the organism cf. Goldstein 1995 and Varela 1991. And see Thompson, Palacios and Varela 1993 for a discussion of circular relations between organism and environment with respect to colour perception, which show that the organism's

noted in “The Spatiality of the Body Itself, and Motility,” in daily life the lived body permeates the built world of human objects and tools: the blind person’s cane, the driver’s car, the feather on a hat, computer keyboards, glasses, clothes, shoes and so on—the vital bric-a-brac of daily life—all become transparently integrated and incorporated into projects that shape our embodied being in the world.²¹ So the lived body cannot be identified by purely biological-material or intellectual formulae. *The lived body is an anticipatory being in the world.*

In virtue of what, then, is our lived body a being in the world that appears in the manner described above, namely, as an implicit, pre-objective and self-integrating background of our life, that shapes our involvement with the world, that is not specified by physiology or psychology, and that permeates the built world? Merleau-Ponty answers this question by invoking the concept of the body schema as it is conceived by the physiologists and psychologists of his day, for example, Holmes, Head, Lhermitte and Goldstein.²² But he is critical of their conception. The burden of his criticism in “The Spatiality of the Body Itself, and Motility” is to argue that empiricist-physiologicist or intellectualist-psychologicist conceptions of the body schema will not suffice in making sense of the phenomena of the lived body.

Merleau-Ponty’s criticisms crucially depend on his discussion of Schneider, who has suffered a brain injury, and his discussion of other disturbances of the body. These

‘chromo-perceptual’ behaviour anticipates a certain sort of chromatic world, since the interpretation of the colour in the environment depends on the articulation of the environment into coloured things, and the ontology of coloured things differs for different species; the dome of the sky is quite a different sort of coloured thing for birds, who navigate by its colour gradations, then it is for us.

²¹ For Merleau-Ponty’s discussion of the integration of instruments into bodily being in the world, of which more below, cf., e.g., the latter parts of “The Spatiality of the Body Itself, and Motility” (*PdIP* 162-172, *PP* 139-147) and the discussion of the blind man’s stick in “The Synthesis of the Body Itself.”

disturbances let Merleau-Ponty ‘get behind’ the implicit and pre-objective shapings of embodiment, which shapings hide from view in everyday life. Like sleep, a disturbance “slackens the intentional threads which attach us to the world and thus brings them to our notice”²³; in disturbances and exceptional cases the phenomenon “disintegrates and re-forms before our eyes.”²⁴ In disturbances and exceptional cases, then, experience itself ‘performs’ a sort of ‘reduction’ of the phenomena. Such ‘existential reductions’ allow Merleau-Ponty to move beyond Husserlian phenomenology and show what is crucially at issue in the existential shaping of phenomena.²⁵

Schneider can engage in motions whose meaning amounts to grasping, but cannot engage in motions whose meaning amounts to indicating. He can move toward things only if his movement fulfils a practical purpose—he cannot engage in such movements if their purpose is stymied or is *to be* stymied; he cannot separate elements of his movements from the total set of motions required to fulfil his purposes; he cannot engage in spontaneous movement for abstract purposes, such as drawing a circle in the air with

²² Cf. *PdlP* 114-119, *PP* 98-102. Cf. the secondary sources listed in note 11.

²³ Cf. *PdlP* viii, *PP* xiii.

²⁴ Cf. *PdlP* 282, *PP* 244.

²⁵ For two important discussions of such methodological issues in *PdlP*, see the preface and Merleau-Ponty’s remarks about reflection in “Sense Experience” *PdlP* 251-256, *PP* 217-222. Kwant (1963, 37) discusses the importance of disturbances, and Langan (1966, 26) notes that exceptional cases serve as an *epoché* for Merleau-Ponty.

With respect to the body schema, Gallagher and Meltzoff (1996) argue that the sort of “forgetting” that occurs in the case of the phantom limb is crucial to Merleau-Ponty’s discussion of the body schema. But they do not acknowledge that such “forgetting” is significant as an instance in which a disturbance makes visible a pre-objective, constitutive structure of our being that must remain invisible in everyday life. They are mistaken to argue that experimental data can reveal the phantom limb as a phenomenon of the body image rather than the body schema. Once the experimenter asks the subject to report on experience (cf. Gallagher and Meltzoff 1996, 218), the subject must articulate phenomena of the body in terms of explicit imagery, and this reflective act articulates phenomena of the invisible body schema as being within the visible body image. Merleau-Ponty’s ‘existential reduction,’ his radical reflection, is meant to get past the abstractive nature of experimental technique and intellectual reflection—which in the end can only

his arm, except by watching his own body or by setting his body into ‘preparatory motions,’ whose partial congruence with the desired motion occasions the completion of the motion. Schneider’s motility, then, depends on his *anticipatory* relation to a *meaningful outcome* for his motions; and he cannot initiate fragments of practical behaviours in abstraction from their meaningful outcome.²⁶

Schneider’s disturbance is therefore not a simple disruption of his motor capacity, or of his perceptual relation to his body, since he can move and even point his body toward his own body when the motion has a practical value for him: he can point to a mosquito that has stung him. Neither can the disturbance be of passive processes of association or passive neural processing, as empiricists and reductionist physiologists would have it, since it effects active anticipatory relations to the world.

But the disturbance cannot be subsumed under purely intellectual representations of objects and the body. First of all, Schneider’s disturbance has its roots in an injury to the brain, and second, Schneider *can* represent motions of his body to himself, since he knows what it would be to draw a circle in the air with his arm. Schneider, however, cannot actually *perform* this motion without deliberately setting himself into preparatory motions that eventually fall into the right pattern. He has to mediate his own motions intellectually, instead of just performing them.

Merleau-Ponty argues that Schneider’s disease can only be conceived as a disturbance within Schneider’s *being in the world*. It can only be explained in terms of

present artefacts—by discerning essences within existence. In this respect disturbances, which exist as reductions relative to the prejudices of normal life, can present us with important insights.

²⁶ For the above and following points about and discussion of the case of Schneider, see “The Spatiality of the Body Itself, and Motility,” as well as mentions of Schneider in the subsequent chapters in

the *meaning* that Schneider's present body and world anticipate in his future bodily relation to the world. The disturbance, we could put it, is in Schneider's embodied anticipatory relation to the world, which embodied anticipatory relation shapes Schneider's *constitution* of the things and bodily powers that sustain and reflect his lived body as an implicit background of experience, which in turn sustains Schneider's constitution of things and bodily powers. Thus Schneider has to explicitly and cognitively deal with issues that prior to his injury were implicit and practical elements of a constitutive background of embodied experience. Schneider's disease reveals that our being in the world, when undisturbed by injuries, is such that our lived bodies have a pre-objective, non-conscious, unthematized relation to the world. This pre-objective relation is to be conceived as revealing the body schema, a principle of our being in the world.

Recent research provides material from which to build other arguments for Merleau-Ponty's claim that there is a body schema in virtue of which we have a pre-objective relation to things, and that the body schema is to be understood in terms of being in the world, not in terms of physiological or intellectual structures. I would like to develop one such argument. (See Gallagher 1995, Gallagher and Cole 1995, and Gallagher and Meltzoff 1996 for further work in this direction.)

The body schema could not amount to, as Head, Holmes and others after them have proposed, a non-conscious *representation* of elements of the body, together with a model for combining these elements to 'calculate' bodily position. In this case the position of limbs would in effect be inferred from the stored knowledge of the lengths of limbs and angles at the joints, much as the blind man in Descartes's *Optics* is said to infer the

part one. Also see the sources listed in note 11, and Zaner's (1971, 164-171) discussion of Schneider in

distance of an object by knowing the distance between his hand and the angle of the sticks relative to the baseline between his hands. As I argued in the last chapter, this leads to a regress or a demand for immediate knowledge of limb length and joint angles. In the case of the body schema, such an account would also not explain why optical distortions of our vision of the *world* change our experience of the *body* (even if some ‘data’ that ‘updates’ the body schema is said to come from the periphery of the distorted visual field): upon getting a new pair of glasses I feel like I am sinking into the steps and pavement outside the optometrist’s office; when living with the inverting lens, Stratton feels as if his head is buried into his shoulders “almost up to my ears,” and when eating, that his mouth is on the wrong side of his eyes; both of these phenomena would seem to suggest that our experience of the body has more to do with our *interrelation* with the world than with a self-contained representational model of the body.²⁷

More than that, as Turvey and Carello argue, the ‘model’ theory does not seem to fit the data, since experiments by Lackner and Taublieb and Craske, in which tendons or muscles of the subject²⁸ are vibrated, induce ‘errors’ in perceived limb position, and in some cases the perceived position was ‘impossible.’²⁹ In these cases Turvey and Carello argue that it is not ‘visual input’ or other encoded representations of the body that change our experience of the body, but ‘kinetic input’ that is specified by states of the body itself

relation to the body schema.

²⁷ Stratton 1897, 467–468. (Also see Stratton 1896.) See page 140 ff. below for further discussion and evidence for the latter point.

See Gibson 1979 on the role of peripheral perception of the body in the co-perception of the body and environment.

²⁸ Throughout this work I have tried to avoid use of the word “subject,” since I am trying to follow Merleau-Ponty in overcoming the subject-object distinction. In what follows, when I use the word “subject,” I use it to refer to subjects of experiments, and only in that sense. Subjects of experiments are embodied perceivers.

in relation to the environment. On the basis of this and other evidence they claim that neural encodings of the joint angles therefore do not necessarily determine the perceived position of the limbs, and that the 'model' of the body is not fixed in advance, since 'impossible' positions can be felt; thus a representational conception of the body schema could not account for the phenomena. Turvey and Carello are taking a dynamic systems approach to perception, which is to say that they are working in a research program that stems from J.J. Gibson's theory of ecological perception, and so they seek to interpret perceived bodily position in terms of an invariant of information in the motor-perceptual interaction between the perceiver and the world.³⁰ Following Bernstein's work on the biomechanics of limbs, they seek this invariant in the physical structure of limbs considered as dynamic systems. They persuasively argue that activities such as wielding a rod with movements of the wrist determines a time-dependent tissue deformation pattern that is "(1) constrained by the rigid arm-plus-rod dynamics and (2) expressed in the intrinsic coordinate system defined by the muscles and tendons of the forearm."³¹ They also argue that the information in this deformation pattern is available in the brain. Movement of one's own body in general yields such patterns, and it is these patterns that *embody* what would in other accounts be knowledge or representations, neural or otherwise, of the position of one's own body. This dynamic theory aims to eliminate the need for explicit representation of the body as an object determined by its dimensions in an externally defined space (for example, within a Cartesian coordinate system), since the

²⁹ Turvey and Carello 1995, 440-41.

³⁰ See the appendix to chapter one for a general exposition of this position.

³¹ Turvey and Carello 1995, 478.

position of the body in external spatial dimensions is specified within the body itself, in time-dependent patterns of non-dimensional quantities (i.e., in the “intrinsic coordinate system” defined by the body as a dynamic system), for example, in patterns of muscle tension and tendon stretch.³² This sort of ‘anti-representational’ dynamic systems approach is also taken in, for example, Thelen and Smith’s account of perceptual, motor and cognitive development; in their theory, knowledge is embodied in self-organising attractors in the state space of the dynamic system, which attractors are determined through the history of the system’s interaction with its environment.³³

On its own, however, Turvey and Carello’s theory cannot capture the sort of anticipatory relations that I have elucidated above, and more important, the theory cannot comprehend the *meaningfulness* of the ‘impossible’ positions that are perceived in the muscle and tendon vibrating experiments. The sort of theory offered by Thelen and Smith will suffer from the same sort of problem in the end too, but at a different level, and here I will just address Turvey and Carello.³⁴ The perceived ‘illusory’ and ‘impossible’ positions of limbs have meaningfulness—albeit a peculiar, intellectually paradoxical

³² Cf. Adolph, Eppler and E. Gibson’s discussion of the use of dimensionless ratios (what Turvey and Carello might call intrinsic coordinate systems) in specifying structures that determine behavioural boundaries (1994, 56-61). The conceptual relevance of this methodological move is that it specifies determinations of qualitative behaviour in terms of ratios between measures, thus making the quantitative determination of behaviour internal to the organism-environment relation, rather than relating it to an external standard. But this still does not eliminate the fact that the behaviour is therefore conceived as an interaction between different dimensioned quantities; just as dimensionless constants in physics (for example, the universal gravitational constant) interrelate dimensional quantities, so too do the dimensionless constants discovered by ecological psychology and dynamic systems theory, even if the constants belong to individuals and arise from situations. For more on this issue, a study of Hegel’s *Science of Logic*, “The Doctrine of Being, Section Two: Magnitude (Quantity)” and a study of the transition into essence would be quite germane.

³³ See Thelen and Smith 1994 and Thelen 1995. For a discussion of attractors and state spaces, see the appendix to chapter one.

³⁴ Cf. my criticisms of Thelen and Smith’s account of the development of walking in the conclusion of this work and in the appendix to chapter one.

meaningfulness—with respect to the integrity of the body. In Lackner and Taublieb's (1984) experiment, subjects underwent three tests in which the right bicep was rapidly vibrated with a mechanical device; in the respective tests the subject's task was to *fixate* on an *unseen* *f*inger with the entire arm hidden from the subject (FUF), *fixate* on the index *f*inger with only the index finger visible (FF), and *fixate* on the *h*and with only the hand visible (FH). Tests were administered in normal lighting conditions and in the dark; in the dark the index finger or hand was rendered visible with phosphorescent paint applied to a surgical glove. (A) In normal lighting in the FF and FH tests, subjects reported a disparity between the felt location of their visible hand or finger and the rest of their arm (which was hidden), to the extent that they felt their arm moving downward further than their hand or finger, that is, *separating* from the hand or finger, yet being *continuous* with it nonetheless, which is a “physically impossible” dissociation of the perceived body (unfortunately Lackner and Taublieb do not give much detail as to how subjects perceived or articulated the arm-hand or hand-finger division). (B) In the dark, subjects reported that they “literally see their finger or hand move in keeping with the apparent extension [of the forearm]. This is true even though eye movement recordings show that the subjects are actually maintaining steady fixation of their stationary hand.”³⁵ (C) Subjects also reported sensations of having multiple limbs; this was also reported by Craske (1977), who conducted a similar experiment in which the subject's task is to locate a hidden limb, in which the tendons are vibrated while the researcher exerts force against the muscle contractions stimulated by these vibrations. (D) In another of Craske's experiments, vibrations were applied in such a way as to induce in subjects the experience

³⁵ Lackner and Taublieb 1984, 104.

of their limbs being extended beyond normal range; subjects reported that ““the arm is being broken,” “it is being bent backwards,” “my hand is going through my shoulder,” and “it cannot be where it feels””; moreover, “Although no pain is involved in the procedure, subjects displayed the overt signs which often accompany pain, such as writhing, sweating, and gasping.”³⁶ Craske and Lackner and Taublieb interpret their results as being due to the suppression of the physical movement of limbs that *would* arise from the muscle contractions that are artificially induced by outside vibrations, rather than by the subject’s action. But it seems that subjects experience these effects as forming a meaningful whole through which they can grasp their bodily situation—even if this leads to peculiar physical impossibilities. Subjects do not experience these effects as the mere addition of component motions and distances that represent the status of a physical system, as if a variable that governs position is running off the end of a scale. Against the experimenter’s objective third person description of the situation: (A) the arm and hand can move apart from one another yet still remain an arm; (B) the seen arm can move without any visual motion across the retina; (C) limbs can double; (D) subjects can experience pain and react to pain when the perceived body is violated, even if pain sensors are not directly affected. I introduce the term “*non-ontonomic*” to describe such experiences, in which the body as we live it does not appear to us as being subject to the laws that govern things or the body *qua* thing.³⁷ These non-ontonomic phenomena cannot be understood if subjective and objective points of view are taken to be two poles of a

³⁶ Craske 1977, 73.

³⁷ See page 135 above for some other descriptions of non-ontomic phenomena from Stratton’s experiment; see page 250, chapter three, for further discussions of non-ontonomic phenomena, this time in the case of weightlessness. Also see the discussion of the illusion of the double marble below, p 159.

dichotomy, since there is a determinate relation between the subjective and objective points of view; and this relation is highly individual across subjects³⁸, and is not predictable through any mechanical or associationist description of the experimental situation or by any predictive model that posits a constancy hypothesis, that is, by any model that at some level roots experience in relations between effects of the body *qua* thing or in externally fixed associational pathways. Rather, these non-ontonomic phenomena should be seen as modifications of our everyday manner of being in the world, as a way of having a *meaningful* experience of the body as an integrated whole that lets us retain our needed grip on the world and our bodies, within non-everyday situations. Non-ontonomic phenomena are, in other words, existential phenomena, phenomena of the 'exister,' of being in the world.

As claimed above, the sort of meaningfulness found in non-ontonomic phenomena is related to the overall situation and task of the experiment's subject. This can already be seen in the above discussion (for example, bending the invisible limb into an impossible position induces gasping), but Roll, Roll and Velay report on a experiment by Roll that gives a more striking example. In the experiment, vibration was applied to the flexor muscles of the hand. This induced an 'illusion' of hand extension when the hand was free. When the subject leaned against a wall with his arm just at shoulder height and his hand pointing forward roughly parallel to the ground, and the same vibration was applied,

³⁸ Both Craske and Lackner and Taublieb report great variety across subjects' gross responses to the tests; as well Craske (1977, 72) reports a high between-subject variability in the error in hand localisation, but a much lower within-subject variability. Cf. Thelen and Smith's (1994) argument that the individual should be the unit of analysis (97-99) and their application of this principle in an analysis of the development of reach, in which they focus on different infant's solutions to the problem of reaching (247-77). The issue of the individuality will also be an issue in the analysis of the results from the experiments on

the subject experienced his whole body as leaning forward; when the position of the hand was reversed so that it pointed backward, the subject experienced his whole body as leaning backward (in both cases the subject's body was, objectively speaking, upright, not leaning). Roll, Roll and Velay are struck by the fact that a simple "change of the orientation of the subject's hand on the wall (from fingers forward to fingers backward) sufficed to reverse the whole-body illusion from forward to backward."³⁹ Within the context of Merleau-Ponty's phenomenology (in particular, his interpretation of the Müller-Lyer's illusion), we ought not interpret this phenomenon as an illusion, but as the perceiver's way of making sense of the overall comportment and situation of his body, given the vibratory stimulation of the wrist flexors; just as the arrows in the Müller-Lyer's illusion are neither equal nor unequal, because they each have their own internal visual constitution, the non-ontonomic orientation of the 'vibrated body' is not to be directly compared with the orientation of the everyday body since it is a 'differently lived' body, with an internal constitution of orientation that makes sense within the lived situation.⁴⁰ That which is continuous across the experimental and everyday situations is the perceiver's meaningful involvement with the world, which is an inherent demand of being in the world. As Merleau-Ponty puts it in his analysis of Wertheimer's experiment, in which the subject is presented with a room that is visually tilted forty five degrees from the vertical, "my body is wherever there is something to be done," and it is when the

weightlessness in chapter three. There I will argue that this individuality is due to the fact that the body schema is a historical, habitual and therefore individual principle of the perceiver.

³⁹ Roll, Roll and Velay 1991, 116-17.

⁴⁰ On the Müller-Lyer's illusion see *PdIP* 12, *PP* 6. See *SdC* for many discussions in which Merleau-Ponty, following Goldstein, points out that the isolated behaviours that can be identified as, for example, reflexes, appear only in the experimental situation, or in self-conscious human subjects who can in their conduct isolate behaviours from one another. The experimental situation is not the same as the everyday.

subject can take hold of the tilted room as a “possible habitat” that the room rights itself visually; “[t]he maximum sharpness of perception and action” that is afforded by the righted room “points clearly to a perceptual *ground*, a basis of my life, a general milieu for the co-existence of my body and the world.”⁴¹ Following these lines, I would claim that the subject’s experience of the lived body in Roll’s experiment is determined by the way in which the subject can take hold of the experimental situation and shape it as meaningful, and different postures motivate different possibilities of meaning. The meaning of these postures, in all likelihood, depends on habit.

These cases suggest that our perceived relation to the environment is shaped by the anticipated meaning of our relation to our situation. It cannot be understood in terms of physical determinations, or representational models that derive from objective conceptions of the world, it is non-ontonomic. The body schema cannot, according to Turvey and Carello’s argument, be a representational system, but neither can it be reduced to time-dependent non-dimensional relations within the tissue of the body itself, a “function of stimulation occurring at that moment,” as Turvey and Carello suggest.⁴² These sorts of results are also supported by the contemporary evidence provided in Gallagher’s reformulation of Merleau-Ponty’s concept of the body schema, in which Gallagher concludes that “If one reduces the performances of the body schema to neurophysiology or inflates them to an intentional body image, certain aspects of embodiment that place important constraints on cognitive life are overlooked.”⁴³

⁴¹ *PdIP* 289-290, *PP* 250, emphasis Merleau-Ponty’s.

⁴² Turvey and Carello, “Dynamic Touch,” 441.

⁴³ Gallagher 1995, 240.

To sum up the above, we have seen that for psychologists and physiologists the body schema, roughly put, is a physiological or cognitive system that is objective and immediately complete, and is thus defined in abstraction from the meaningfulness of the world. But Merleau-Ponty's analysis of the case of Schneider showed that Schneider's primordial, unreflective relation to the world has been 'blinded' toward certain possibilities of *abstract actions* as goals, and thus Schneider is 'paralysed' with respect to certain possibilities of *abstract* bodily motion. But this is not a 'blindness' of perception or a 'paralysis' of the muscles, it is a more fundamental disturbance of the anticipated meaningfulness of his being in the world. As Merleau-Ponty notes, when psychologists, in order to account for the meaningfulness of the body schema in relation to its disturbances, admit that the body schema is "dynamic," the precise sense of this posited dynamism is really that the body is internally related to the meaningfulness of the world and thus "my body appears to me as an attitude directed towards a certain existing or possible task."⁴⁴ Things are already related in a meaningful system without our having to run them through an explicit 'symbolic' or 'objectifying function'⁴⁵; in the case of our ability to imitate other bodies "what we have called the body schema is precisely this system of equivalents [i.e., of imitations], this immediately given invariant whereby the different motor tasks are instantaneously transferable."⁴⁶ Thus "Beneath the intelligence

⁴⁴ *PdlP* 116, *PP* 100.

⁴⁵ Cf. *PdlP* 164, *PP* 140-41, cited below.

⁴⁶ Cf. *PdlP* 165, *PP* 141. For an interesting discussion of imitation and the body schema in the case of infants, see Gallagher and Meltzoff 1996; however, I do not believe that Gallagher and Meltzoff's claims about the non-innateness of the body schema in Merleau-Ponty are correct, and I think their exposition of Merleau-Ponty on imitation is misrepresentative of the position that Merleau-Ponty develops in *PdlP*.

as an anonymous function or as a categorial process, a personal core has to be recognized, which is the patient's being, his power of existing. It is here that the illness has its seat."⁴⁷

Together, the cases analysed above show that:

Our bodily experience of movement is not a particular case of knowledge [*connaissance*]; it provides us with a way of access, of getting to the world and the object [*une manière d'accéder au monde et à l'objet*], a 'praktognosia',² which has to be recognized as *original and perhaps as originary* [*comme originale et peut-être comme originaire*]. My body has its world, or understands its world, without it having to pass through 'representations,' without having to subordinate it to 'objectifying' or 'symbolic functions'. (*PdIP* 164, *PP* 140-141,⁴⁸ emphasis mine)

² Grünbaum, *Aphasie und Motorik*

We have a power of co-existence with the world that is constitutive of our embodied being in the world, that is not reducible to an association of images or sensations that things effect in us.

This power is seemingly like a searchlight that picks out things with which we can become involved. But as Merleau-Ponty quickly points out, the meaningfulness of Schneider's 'blindness' means that "the analogy of the searchlight is once again inadequate, since it presupposes given objects on to which the beam plays, whereas the central function to which we refer, *before* bringing objects to our sight or knowledge, makes them exist for us in a more intimate sense."⁴⁹ Instead of an empiricist searchlight that lights up already present objects, or an intellectualist searchlight that synthesises its object through purely cognitive processes, the lived body itself in its very being already *anticipates* a world to get hold of, and invests things with thing-hood in reaching for the

⁴⁷ *PdIP* 156, *PP* 134.

⁴⁸ In Smith's translation "without it having to pass through 'representations'" is omitted.

⁴⁹ *PdIP* 158, *PP* 136, emphasis mine. On the searchlight metaphor being once again inadequate, cf. Merleau-Ponty's discussion of the inadequacy of the logic of the searchlight metaphor in "'Attention' and 'Judgement.'"

world. Without our thinking about it or feeling ourselves personally involved, our body beneath us shapes itself to get a grip on the world, and this in turn, as we shall see in the discussion of the body schema and perception, shapes the world that is *to be* got hold of. To return to I.W. and G.L. for a moment, Cole and Paillard note that when deafferented patients such as I.W. and G.L. cannot see their hand, but can see the object that they are reaching for, preshaping of the grip posture to the size and shape of the object to be grasped is absent, while it is still found in control subjects.⁵⁰ In the normal case, our bodies preshape themselves toward a world that is *to be* grasped; for I.W. and G.L. this preshaping requires the mediation of explicit visual representations of the body as object (although this does not mean that I.W. and G.L. do not preshape themselves to the world in other ways).⁵¹ Thus instead of a searchlight that picks out or synthesises objects, we find the lived body, *in whose very reach the shaping of things is already implied*. As Merleau-Ponty puts it:

In the gesture of the hand which is raised towards an object is contained a reference to the object, not as an object represented, but as that highly specific thing towards which we project ourselves, near which we are in anticipation, and which we haunt. Consciousness is being towards the thing through the intermediary of the body.... Motility, then, is not, as it were, a handmaid of consciousness, transporting the body to that point in space of which we have formed a representation beforehand. In order that we may be able to move our body towards an object, the object must first exist for it, our body must not belong to the realm of the 'in-itself.' (*PdIP* 160-61, *PP* 138-139)

The lived body, then, is such that it exhibits a pre-reflective, pre-objective power that *constitutes* both the identity of the body and the identity of things around us as

⁵⁰ Cole and Paillard (1995) find this in the case of I.W. and G.L., 253; they also report similar conclusions in Jeannerod, M., F. Michel and C. Prablanc, "The Control of Hand Movements in a Case of Hemianaesthesia following a Parietal Lesion," *Brain* 107 (1984): 899-920. This pre-shaping of grasp appears very early on in life (even, according to de Vries et. al.'s 1984 survey, prior to birth; see also Prechl and Nolte 1984); see Butterworth 1995, Butterworth 1988, Thelen and Smith 1994, von Hofsten and Rönnqvist 1988 and Kravitz, Goldenburg and Neyhus 1978.

⁵¹ Cf. Gallagher and Cole's (1995) claim that I.W. conducts much of his activity using the body image (an explicit representation of the body) rather than the body schema.

belonging to a world. But for Merleau-Ponty the true meaning of the body is that we are beings in the world. This is the main point of the first two chapters of part one of the *Phenomenology of Perception*. The power that constitutes us as being in the world, as being amongst things that are already meaningfully related to our bodily being, is thus *fundamental* to body as a being in the world; this power is original in the sense that it cannot be reduced to physical processes or cognitive systems of representation; and it is originary in the sense that it is that through which alone there are things for our bodies at all. Following Merleau-Ponty, I shall describe such a constitutive power of our being, a power that is necessarily prior to all experience, yet is rooted in the contingencies of our embodiment—a faculty that would be described as *a priori* in a Kantian tradition—as *primordial*.

On Merleau-Ponty's analysis, then, the body schema that is the object of the psychologist's investigation reveals itself as being within the lived body's primordial power of co-existing with the world. I conceive the body schema as the central, self-shaping kernel, the most primordial moment, of the primordial power that shapes the lived body and the world prior to and in anticipation of our involvement with things. The body schema as kernel of our embodied power of being in the world, recedes from explicit experience, but the very shape of experience points to this receding kernel. One's body as shaped by the body schema is thus the "third term, always tacitly understood, in the figure-ground relation," and "the body schema is finally a way of expressing that my body is in the world"; the bodily space that is articulated by the body schema's mediation of the figure-ground relation is "the darkness in the theatre needed to show up the performance, the background of somnolence or reserve of vague power against which the

gesture and its aim stand out, the zone of not-being *in front of which* precise beings, figures and points can come to light.”⁵² To say that we have a body schema is therefore to say that there is a motivational shaping of the phenomenal field: sensory givens that would otherwise be signs of the perceived solicit an anticipatory body that forms an exploratory motor-perceptual system with the world, and in soliciting the body’s explorations, these ‘signs’ motivate explorations that shape our phenomenal field as meaningful. (This will become more apparent in the discussion of the body schema and perception below.)

The body schema, then, belongs to the ontological category of a power, more specifically, a primordial power, that is to say, a sort of *a priori* of embodiment that is rooted in the contingencies of embodiment. Later I will show that the body schema should in fact be understood as belonging to the ontological category of *habit*.

* * *

At this point I would like to distinguish my position on the body schema from that of Gallagher. In “Body Schema and Intentionality,” Gallagher, I think rightly, argues that the body schema is pre-noetic, that is, prior to explicit noetic acts in the Husserlian sense; yet the body schema affects intentional experiences in the sense that it “reflects a practical attunement of the body to its environment,” and the body schema cannot be reduced to neurophysiology or inflated to an intentional body image.⁵³ In other articles, however, Gallagher seems to suggest that the body schema is separable from intentionality: the

⁵² *PdIP* 117, *PP* 100-101.

body schema “is a system of motor functions that operates below the level of self-referential intentionality, although it can enter into and support intentional activity.”⁵⁴ The latter notion of the body schema as support for intentionality suggests a weak connection between the body schema and our intentionality, and this weakness is reinforced by Gallagher’s repeated emphasis on the body schema “as a system of motor capacities.” as well as his descriptions of the body schema *qua* a support for intentional action that serves as a sort of uniting framework that stabilises the body.⁵⁵ This suggestion, which disconnects the body schema from our intentionality toward things, is wrong in the context of Merleau-Ponty’s philosophy. It neglects the importance of Merleau-Ponty’s discovery of motor-intentionality and habit (although in several places Gallagher acknowledges that the body schema is importantly related to habit).⁵⁶ If the body schema were not intentional, there would be no unity to motor intentionality and habit, and in that case Merleau-Ponty’s study of motility would not have led him to the “new sense of the word ‘sense’ [*sens*’]”⁵⁷ that takes him beyond the alternatives of empiricism and intellectualism. If the body schema were not intentional, there would be little sense to Merleau-Ponty’s claim that “The theory of the body schema is, implicitly, a theory of perception.”⁵⁸ and this claim is crucial to part two of the *Phenomenology*. (On the other hand, in an earlier (1986b) article “Hyletic Experience and the Lived Body,” Gallagher

⁵³ See Gallagher 1995, 239-240. This position is also suggested in Gallagher 1986c.

⁵⁴ Gallagher and Meltzoff 1996, 216.

⁵⁵ Gallagher and Meltzoff 1996, 214, 216; also Gallagher and Cole 1995.

⁵⁶ See Gallagher and Meltzoff 1996.

⁵⁷ *PdIP* 171-2, *PP* 146.

⁵⁸ *PdIP* 239, *PP* 206.

does suggest a stronger connection between the body schema and perception, in the context of an analysis of Husserl's phenomenology.⁵⁹) Gallagher's work is important in elucidating the nature of the body schema, but it is crucial for Merleau-Ponty that the body schema always already be intentional, which does not seem to be the case in Gallagher's account. Gallagher, though, does show us that the 'object' of the intentionality of the body schema could not be the image of the body or an explicit thing in the world. That is, the intentionality supported by the body schema is not directed to an already constituted body or thing, it is constitutive of the body and things.

Gallagher is also concerned to distinguish the body schema, which is 'behind' perception, from the body image, which is a system of representations of the body given in perception. Gallagher argues that Merleau-Ponty is in some ways imprecise in maintaining this distinction.

He [Merleau-Ponty] argues that, on an existential level, there is a continuous development between the schema and the image, that they are elements of one system, and that on the level of the lived experience of the body there is an "indistinction" between these elements. Still, on the conceptual, analytical level he is careful not to confuse them. (Gallagher and Meltzoff 1996, 217)

Gallagher finds this indistinction between the body schema and body image, which he identifies in the *Phenomenology* and in "The Child's Relation with Others," problematic.⁶⁰ But I think that Gallagher's argument is too 'intellectualist' (especially in Gallagher and Meltzoff 1996) to encompass and encounter Merleau-Ponty's position. My appearance to myself and others shapes the development of my body schema, and my body schema, which attunes me to others and things, shapes my appearance to myself and others; these image-schema interactions shape my overall habit of being in the world, and

⁵⁹ Cf. note 76

it is because I have habits that reorganise and establish 'set' interactions with the world that I can on reflection discern a body schema and body image as conceptually distinct principles of my embodied being in the world. The point is that if we are to avoid the errors of psychology, which would construe the body schema as a sophisticated motor system, then the body schema will be a principle of an embodied, intentional being in the world; in this case, on an existential level the body schema and body image *will* be in a continuous development, and it is crucial to Merleau-Ponty that there be this continuity. Gallagher's attempt to distinguish the body schema and the body image is important in helping us refine our analyses, but could lead us astray by tempting us to posit or reify the body schema and body image as two distinct systems in the perceiver.

Finally, Gallagher and Meltzoff (1996) augment their important suggestion that for Merleau-Ponty the body schema is habitual and developmental, with the criticism that for Merleau-Ponty the body schema is not innate. My claim that the body schema is a primordial habit (which I discuss below) entails that the body schema is both innate and developmental, and I see no contradiction in this. While Gallagher and Meltzoff's discussion offers insights into the empirical motivations of Merleau-Ponty's discussions, and gives some important empirical reasons for thinking that the body schema must be innate, I think their criticism of Merleau-Ponty crucially depends on a misinterpretation of Merleau-Ponty's claim about the phantom limb and organic repression; it neglects some important points that Merleau-Ponty makes about the need for a basic and primordial habit at *PdIP* 107, 275, *PP* 91, 238; and it does not do justice to Merleau-Ponty's discussion of imitation and the experience of the infant in "The Spatiality of the

⁶⁰ On this point, see also Gallagher 1995.

Body Itself, and Motility” and *PdIP* 404, *PP* 352. Also, their concept of innateness would, I think, entail that the body schema is innate in the physiology of the human body, whereas I want to argue that it is innate in the system: body-world-others; I think this is part of the point of Merleau-Ponty’s “The Child’s Relation with Others,” and is also apparent in Merleau-Ponty’s discussion of our relation to others in the *Phenomenology*.

The Body Schema and the Ontology of the Lived Body

In the sections and chapters that follow I want to show how the lived body with its schema shapes spatial perception. To do this, I will first show how the body schema shapes perception in general. But this requires understanding a crucial point about the ontology of the lived body, a point that follows from the discussion of the body schema.

We have seen that the body schema is ontologically prior to things and the world, since our experience of things and the world depends on the body schema. But the body schema is rooted in the contingencies of our embodiment, it is a power that belongs to the body and that works through the physiology, neurology, history, situation, culture, technology, and so on, given to us in our embodiment. The body schema is vulnerable to the ravages of the world and time—a bullet wound manifests itself as a disturbance of the bodily schema of Schneider’s being in the world—and it is vulnerable to the harsh gaze of the social world, since our look in the eyes of others can shape the meaning of our bodies and our involvement with the world.⁶¹ The body schema *qua* kernel of our power of being in the world is thus a complex self-interpreting fact—*un fait*—a making, of the

⁶¹ On this theme, see Merleau-Ponty’s chapter on sexuality in *PdIP* and also Sartre in *Being and Nothingness*. On my argument, the body schema is open to social influences since we are interpermeated

body. It is precisely this sort of fact of the body that we point to when we say that the phenomena exhibited in our lived bodies mark out a principle such as the body schema.

The body schema, then, is ontologically prior and ontologically posterior to the phenomena of lived experience. There is therefore a complicated circularity in the being of our bodies, an interpermeation of body and world. We indicate such a circularity whenever we conceive our bodies or our being as a *self*, as a being that identifies and constitutes itself only within and in distinction from a surround that it identifies as not-self—but this very characterisation shows that the surround is integral to the self-identifying process in which a self constitutes itself. To say that a being is self-constituting is never to say that it is wholly independent of all things other than itself, quite the opposite, such a being is internally related to surrounding otherness, it is precisely indistinguishable from this otherness except through its own self-identifying process, or by some other that recognises its selfhood. To say that a being is self-constituting is thus to say that a constitutive feature of this sort of being is that it works out its 'own' standards of independence and dependence, of self and other, in relation to its surround, and it is precisely these sorts of standards that we recognise when other selves appear to us. This dialectical structure of self and other, and the dialectical structure of identity and difference that is integral to it, is the subject of long standing and rich discussions in philosophy that I will not go into here, except to say that the resources that I draw on most for my understanding of this issue are Merleau-Ponty and Hegel, and the characterisations of this dialectic at the organic and bodily level that are given by Russon, Varela and Thompson. Here I only wish to note that if the body schema has the

with the world and the body schema develops through a dialectical relation with the body image. See

sort of ontology pointed to above—if the body schema is the kernel of our power of our being in the world—then the lived body will have the peculiar self-constituting ontology of a self that is interpermeated with its world.

The self-constituting ontology of the lived body is crucial to understanding Merleau-Ponty's claims about the role of the body schema in perception, and it will constantly surface in what follows. So some further remarks are required.

To see that the lived body has a self-constituting identity—or in the terminology that I would prefer, that the lived body appears through its own shaping of itself as a being in the world—consider how we behave as bodily and the way that our bodies appear to us as our bodies. Our bodies appear to us as shaped by the sort of pre-objective anticipatory relation to things that is given through the body schema. The anosognosic's arm is absent for the perceiver in virtue of the fact that the arm's meaningful role in the body schema—to-be-a-grasper-of-things—is 'repressed'; the phantom limb is present for the perceiver in virtue of the fact that its role in the body schema—to-be-a-grasper-of-things—is held over from past attitudes toward the world. And as I have noted above, we are capable of integrating various prostheses such as canes, glasses and so on, into our bodies, or extending ourselves through machinery; as well, our homes, cities, routines, jobs, histories, and so on, become integral to our lived bodies—our sleep, ingestion and excretion can be disturbed by travel, and this is not reducible to biological determinations.

The lived body thus appears as shaping its own being in the world. If, as Russon suggests, the organism is to be comprehended as a "hermeneutical machine" that

Schilder 1935 and Gallagher 1995 for some further examples of social influences on the body schema.

performatively interprets itself through its environment,⁶² then, as Merleau-Ponty writes, when it comes to the human body, “If we can still speak of interpretation in relation to the perception of the body itself, we shall have to say that it interprets itself.” The body is, then, “to use Leibniz’s term, the ‘effective law’ of its changes,” but this is not the sort of law, fixed in advance once and for all, that specifies the identity of a geometrical object.⁶³ The body sets and interprets its own law—this means that to the extent that the body is capable of transcending its biological, cultural and individual determinations through habit, the lived body shapes its internal relation to the world at various levels: the body sets its own standards for being body in our activity of being body. In other words—and I will discuss this below when I talk about habit as the development of the body schema and habits—the body exists as a self-shaping that roots its own transcending development. The lived body is thus “a nexus of living meanings, not the law for a certain number of covariant terms.”⁶⁴

The being of the body, then, is a performative self-interpretation, which is to say that the ontology of the body follows a logic of expression.⁶⁵ This is the sort of logic that we found in the account of motivating relations in chapter one, in which “an antecedent... acts only through its significance”⁶⁶ and that is captured in Merleau-Ponty’s and others’s

⁶² Russon 1994.

⁶³ *PdIP* 175, *PP* 150.

The peculiar nature of this law is contra (at least a straightforward interpretation of) Gallagher’s (1995, 233) claim that for Merleau-Ponty “the body schema might best be expressed as a set of laws,” even though Gallagher is right to say that for Merleau-Ponty the body schema is not a representation.

⁶⁴ *PdIP* 177, *PP* 151.

⁶⁵ For an insightful discussion that interrelates expression, motor behaviours and perception insofar as it conceives the fields as organised by gesture, see Langan 1966, 26-33.

⁶⁶ *PdIP* 299, *PP* 259.

analyses of forms of expression such as emotions and language. In these sorts of analyses (specifically, in what Merleau-Ponty would call primary instances of expression, where the expression has not yet become a conventional sign) the emotion or thought that is expressed is inseparable from and dependent upon the expression: “The gesture *does not make me think* of anger, it is anger itself.”⁶⁷ The ‘outer’ form is the very substance through which the ‘inner’ determination is expressed, but there would be no ‘inner’ determination without the ‘outer’ form. With respect to embodiment, anosognosia, for example, may precisely manifest a determination of the anosognosic to repress her possibility of grasping the world, in order to meaningfully reflect her world involvement, but such a determination could only be manifest for this individual in bodily behaviour in which she ‘refuses’ to grasp with the limb—we cannot comprehend the meaning of anosognosia without seeing that the entire behaviour reflects a spontaneous reshaping of the union of ‘inner’ and ‘outer,’ that what we have is a phenomenon in which we distinguish an ‘inner’ meaning only insofar as it manifests itself in an ‘outer’ meaning that is appropriate to it. Thus the inner and the outer have meaning only in light of one another, and the distinction between inner and outer breaks down—the body and world interpermeate one another. It is for this reason, I think, that Merleau-Ponty claims that the

⁶⁷ *PdIP* 215, *PP* 184. Also see Merleau-Ponty’s discussion of the expressive body, and the interdependence of gesture and language in “The Body as Expression, and Speech.” Cf. Collingwood’s discussions of the interdependence of language, emotion and gesture (Collingwood 1938); David McNeill’s linguistic analysis of the relation between ‘body language’ and verbal language (McNeill 1992); and Cole and Paillard’s description of the discomfort of others at I.W. and G.L.’s lack of a spontaneous body language that leads I.W. and G.L. to develop a repertoire of body movements that they self-consciously deploy when talking to others. Also see the discussion of the perception of things as developing in a dialogue with the world where, e.g., Merleau-Ponty writes that “Love *is* in the flower prepared by Félix de Vandenesse for Madame de Mortsau” (*PdIP* 369-371, *PP* 320-321). Finally, compare this conception of expression to that developed by Hegel in which the outer expression (*äußern*) of inner laws is, in contrast to Kant, nothing other than the appearance of inner laws in a self-mediating process, and this is the only way in which such ‘inner’ laws can make any appearance whatsoever, so that inner and outer become moments of a dialectical relation. On this issue see also Russon 1996.

body, like a novel, poem, picture or musical work, is an individual, that is, “a being in which the expression is indistinguishable from the expressed.”⁶⁸

It is this sort of expressive individuality that we refer to when we say that the lived body is self-constituting and when we say that certain features of our experience are constitutive, primordial features of our embodiment. It makes no sense to ask why a stop sign is red; given our traffic sign system, redness is a *constitutive* feature of a stop sign. Likewise, I suggested above that it makes no sense to ask why our experience pre-objectively involves us with the world, since our embodiment is inherently a pre-objective involvement with the world; this involvement is a *constitutive, primordial* feature of our embodiment, as is the body schema. When we wish to understand the necessity of redness as a constitutive feature of the stop sign, we refer to a contingent, conventional system specified by an agency outside the stop sign. But in the case of our embodiment, we, or the pre-personal primordial powers given in our embodiment, through our interpermeation with the world, shape our own constitution. The necessity of constitutive features such as the body schema is contingent, but this contingency is necessary, since it is internal to our being, even if it recedes into a pre-personal primordiality.

Understanding such constitutive features of our embodiment therefore means putting “essences back into existence,” and we can only do this if we give an account from within the self-shaping process of our embodiment. Another way to put this is to realise that if the body is constitutive of its involvement with the world, then instead of pre-delineating the boundaries of the body according to external criteria, we must

⁶⁸ *PdIP* 177, *PP* 151.

recognise the way that the body shapes itself within the world. These last points would serve as the basis for an important methodological argument for phenomenology and against heterophenomenology⁶⁹—if the ontology of the lived body is that of a self-shaping individual, then it will not do to account for the determinacies of its being from an objective, third person point of view. Rather, we need an account of the essential self-shaping of this individual; this account will, no doubt, touch down in third person processes, but not be reducible to them.

This leads to a remark about the ontology of the body schema that cannot be emphasised enough. The body schema is not independent of the lived body; the body schema is not a thing or substance or intellectual construct; the body schema is the kernel of a power belonging to the lived body. Gravity does not exist independent of a perceivable cosmological system in which we find it at work, and the isolation of gravity from other forces is something that *we* achieve in our reflections on the phenomena of the physical world.⁷⁰ Likewise, the isolation of the body schema is something that *we* achieve in our reflections on the phenomena of the system formed by our lived body and the world. But this is not to say that the body schema is not real: just as gravity acts in the cosmos, the body schema acts in the lived body. Only gravity is isolated as a universal law that acts indifferently on all masses, whereas the body schema belongs to a self-interpreting, expressive individual that is its own ‘law.’ To put this in Aristotelian terms, the body schema is a principle of the body, and we will never find it on its own in our experience, we will only find the ‘compound’ of body schema and body within the lived

⁶⁹ See Dennett 1991; cf. my discussion of Dennett’s heterophenomenology in chapter one, page 81.

body. To give a full account of the body schema, then, we cannot stick with the way that *we* isolate it, but must understand how the body schema is distinguished in terms appropriate to the lived body itself (*for* the lived body); and this requires understanding the body schema *qua* power in terms of habit, which we will come to later. For now, though, the functional description of the body schema and the analysis of its ontology in terms of power and self-expressive law will let us see how the body schema works in perception.

Before moving to that topic, I would like to note that the fact that the ontology of the lived body is at least implicitly conceived in the above manner in the *Phenomenology of Perception*, even if it is not explicitly thematised as such, strongly suggests to me that the ontology of flesh, as developed in *The Visible and Invisible*, is already implicit in the *Phenomenology of Perception*.

The Body Schema and Perception

I now turn to the role of the body schema within perception. I will show that, given the fact of the body schema and the ontology of the lived body, the lived body's immediate sensory contact with the world is already shaped into meaningful perception. So the theory of the body schema is, as Merleau-Ponty puts it, already a theory of perception.

Given the ontology of the lived body, the antecedent of the following claim in the chapter "The Theory of the Body is Already a Theory of Perception" is true:

⁷⁰ Cf., e.g., Merleau-Ponty's claims in *SdC* 150, *SB* 139.

If, then, as we have seen to be the case, the body is not a transparent object, and is not presented to us in virtue of the law of its constitution, as the circle is to the geometer, if it is an expressive unity which we can learn to know only by actively taking it up, this structure will communicate itself to the sensible world [*va se communiquer au monde sensible*]. The theory of the body schema is, implicitly, a theory of perception. (*PdIP* 239, *PP* 206; cf. *PdIP* 175, *PP* 150, cited on page 154 above)

What I need to show is that the antecedent means the consequent, that the fact that the lived body shapes itself through its interpermeation with the world means that the body schema is communicated to the world in this self-shaping activity. Further, I need to show that this activity is perception. I will do this by discussing several points in the *PdIP*.

In “The Theory of the Body is Already a Theory of Perception,” Merleau-Ponty analyses the illusion of the double marble. In the non-illusory case, when we touch a marble with our middle and index finger we feel a single marble. On the other hand, when our middle and index fingers are forced to cross one another and we touch the marble with our eyes closed, we experience not one, but two marbles. And here I should note that in this illusion we also feel a tinge of a non-ontonomic peculiarity in our hand and body, difficult to describe, as if parts of the world and body are twisted around or doubled, while other parts remain the same—this is precisely why we call this experience an illusion. How are we to explain the illusion?

We do not experience the marble as double because our sensory surfaces are disturbed from their usual positions in the space of the world, so that an inferential or associational process that maps from sensations to the perception of things is disturbed and generates sensations that are equivalent to what would be sensed if we were to touch two different marbles with the outside edges of (uncrossed) middle and index fingers. Against this view, in which fingers are reduced to their objective determinations within a mapping of sensory surfaces that is independent of our activity and is specified according

to external spatial determinations, Merleau-Ponty cites experiments that show that the marble is not merely doubled, but that the sensations effected in the index finger are experienced in the middle finger, and vice versa. Beneath the static sensory mapping posited above, there is a schema in which the power of manipulating things is played by the parts of the body that are available in a given situation. When the index and middle fingers are crossed over, the middle finger assumes the role that would be played by the index finger in manipulating things, and vice versa. Beneath the crossed fingers, we feel ourselves exploring the marble with uncrossed fingers. But when the fingers are crossed over, the middle and index finger cannot fully play the role of the manipulating power that is anticipated in the body schema, since the crossed fingers do not have the power of grasping and exploring things. I would argue that Merleau-Ponty's analysis of this point is supported by recent results.⁷¹

⁷¹ See *PdIP* 237-239, *PP* 205-206 for Merleau-Ponty's discussion of the illusion. Merleau-Ponty cites results by Tastevin, Czermak and Schilder, quoted by Lhermitte in *L'Image de Notre Corps*; the reference to Tastevin is to Tastevin 1937.

Merleau-Ponty refers to the illusion as Aristotle's illusion, as does the psychological literature (Aristotle discusses it in *Metaphysics* IV-6 and *On Dreams* 2). Benedetti has also coined the terms "tactile diplopia" (diplopia is the term used to describe double vision) and "diplesthesia" to describe the illusion and related phenomena. See Benedetti 1985 for an overview of the illusion and experiments that elaborate on Tastevin's results. See Benedetti 1986a, Benedetti 1986b, Benedetti 1988a and Benedetti 1988b, for studies of related diplesthetic phenomena. I would argue that Merleau-Ponty's analysis is supported by Benedetti's results.

It is worth noting here that a similar doubling can occur when other active and passive surfaces of the body such as lips, earlobes and the scrotum are displaced out of their usual positions (Benedetti 1988). This would suggest that the body schema not only anticipates an *active* being in place, but a *passive* being in place. An active displacement (the forcing of fingers into a crossed position) is needed to induce a doubling in the fingers as an active organ, even though (as Benedetti 1986b shows) a passive displacement of skin of the fingers can also induce a doubling when the fingers are *immobilised*.

Merleau-Ponty's analysis, to my mind, is also supported by the following two phenomena. (1) As I repeat this experiment over and over again, while writing this thesis, and become more capable of manipulating things with crossed fingers, the feeling of doubling seems to 'dissipate' when I explore things with crossed fingers. (2) After spending some time on a given occasion manipulating things with crossed fingers, and then uncrossing them, the world beneath *uncrossed* fingers seems to double, and there seem to be localised reversals of my spatial anticipations. For example, when I start typing after having my fingers crossed, the keys of the keyboard are in the 'wrong' place. These disturbances fade rapidly as I continue typing.

According to Merleau-Ponty, then, we experience a single marble when the identity of the lived body, which is anticipated in the body schema, is reflected and confirmed through fingers that can in fact manipulate the marble *qua* single, and in so manipulating the marble, unify the marble as a thing that expresses and confirms the identity of a body that aims to manipulate solid, un-doubled things. In the illusion, our crossed fingers cannot actually act as a motor-perceptual organ that shapes itself in anticipation of manipulating solid shapes, even though our fingers ‘try’ to; this motivates the appearance of two illusory marbles—the two marbles do not have the solidity of a unified thing that can be firmly grasped. Thus according to Merleau-Ponty, “the illusion is primarily a disturbance of the body schema.”⁷² (The experience of the illusion is, in other words, a case in which what can actually be given through the body-at-this-moment differs from what is anticipated by the body schema, it is a phenomenon to be explained by the ‘momentum’ of the anticipatoriness of the lived body.⁷³ Feeling the double marble is akin to feeling pain in a phantom limb—we feel the double marble with a body whose anticipatory explorations are not actually borne out in the flesh.)

Merleau-Ponty concludes that “The synthesis of the object is here effected... through the synthesis of the body itself, it is the reply [*réplique*] or correlative to it, and it is literally the same thing to perceive one single marble, and to use two fingers as one single organ.”⁷⁴ Perception is an activity in which the things that we perceive attain their shape through our postural comportment toward them, which comportment unites our

⁷² *PdIP* 237, *PP* 205.

⁷³ On the terminology used in this description, see Merleau-Ponty’s discussion of the phantom limb, esp. at *PdIP* 97, *PP* 82. Also see the discussion of habits below.

explorations toward a unified world that *will be* for our lived body. And our comportment is shaped by the anticipatoriness of the body schema. Further, to have our motor-perceptual explorations of the world be confirmed by the world, is to unify the body toward the world, and it is thus to synthesise the body. When I grip a unified thing with my fingers, at the same time I unify my fingers as a gripping organ. Thus according to Merleau-Ponty, “Every external perception is immediately synonymous with a certain perception of my body, just as every perception of my body is made explicit in the language of external perception.”⁷⁵ *Every perceptual synthesis is a motor-perceptual synthesis shaped by the body schema, in which the synthesis of things is at one and the same time a synthesis of the lived body.*

Our lived body, then, necessarily works out its identity through the mutual shaping of the lived body and the world, in which the identity anticipated in the body schema is communicated to the world through the body’s activity. The marble is *to be* a thing manipulated with grasping fingers, even if the fingers are crossed, and thus the schema of grasping, which would unify grasped things, is communicated to the world. In this way the body poses a question to the world. If the world confirms the schema that the body communicates to the world in motor-perceptual activity, then we perceive a unified marble through a unified manipulating hand. If the crossing of the fingers in motor-perceptual activity prevents the question and answer from confirming one another, then another perceptual result arises, and the appearance of both the body and the world are disturbed.

⁷⁴ *PdIP* 237, *PP* 205.

⁷⁵ *PdIP* 239, *PP* 206.

This shows that if the body “is an expressive unity, which we can learn to know only by actively taking it up, this structure will communicate itself to the sensible world.” And since the structure anticipated in the body schema communicates itself to a world that is already anticipated as reflecting the body as a perceptual being in the world, the sensory surfaces of our body already converge toward the sensible world as to a world of *things perceived*. The activity that shapes itself in anticipation of a perceived world is not merely *sensory*, but is already *perceptual*. Thus, as Merleau-Ponty writes, “The theory of the body schema is, implicitly, a theory of perception.” The theory of perception that is already implied in the theory of the body schema is therefore a theory in which the synthesis of the thing is not achieved through a purely intellectual act or through causal processes, but through a motivational relation that is shaped by the anticipatoriness of our embodiment, by our body schema, and is worked out through our motor-perceptual activity, within a framework in which our body and the world interpermeate one another.

Lingis gives an excellent, if enigmatic and brief, account of this theory of perception in “The Body Postured and Dissolute.”⁷⁶ I would like to quote Lingis at some length here because I think that Lingis’s discussion captures Merleau-Ponty’s suggestions about the body schema and perception, as well as Merleau-Ponty’s position on the interrelation of the senses within perception, as discussed in the chapter “Sensation”; and it also goes some way to portraying Merleau-Ponty’s position on the ontological status of things.

⁷⁶ Also cf. Gallagher’s (1986b) illuminating discussion (articulated in relation to Husserl) of the way in which the lived body “translates” hyletic experience into behaviour; and the way that the world takes on a perceptual organisation through the interrelation of the body’s posture and physiology, on the one hand, and its kinaesthetic and somaesthetic experiences, on the other hand. Gallagher’s theme of “translation,” however, seems to suggest that givens of experience are first at play in themselves in the body-world relation, and are then invested with meaning. Merleau-Ponty’s claim is much stronger: in virtue of the anticipatoriness of the lived body, sensations are *already* informed with meaning, and the figure-ground

Lingis's account is then a fitting reinforcement and recapitulation of the broad point that I have been trying to get at.

A thing is not a whole assembled by the central nervous system out of separate sensory data, nor is it a conceptual term posited by the mind and used to interpret the data being recorded on the separate senses. The sense organ focused on a pattern is a segment of the whole interconnected mass of the sensory nervous system. What we pick up with the eyes is already sensed by the whole sensitive substance of our body. When we see the yellow, it already looks homogeneous or pulpy, hard or soft, dense or vaporous, it already registers on our taste and smell; anything that looks like brown sugar will not taste like a lemon. To see it better and *to see it as a thing is to position oneself before it and converge one's sensory surfaces upon it*. It is the postural schema that comprehends things. To recognize a lemon is not to conceive the idea of a lemon on the occasion of certain sensory impressions; it is to know how to approach such a thing, how to handle it, so that its distinctive way of filling and bulging out space, its distinctive way of concentrating colour and density and sourness there becomes clear and distinct. (Lingis 1996, "The Body Postured and Dissolute," 55, emphasis mine)

As Lingis's description makes clear, in a theory in which perception is shaped by a body schema that is neither purely intellectual nor purely physiological, but pre-objective and motor-intentional, things perceived will not be the result of an intellectual synthesis or associative process. As Lingis puts it, "Maurice Merleau-Ponty has identified what perceives things as such, what comprehends the essence or the unity of things, to be what converges the sensory surfaces and movements: our body's postural schema"—although it would be better to say that we perceive *with* our body schema, rather than saying that it is the body schema that perceives.⁷⁷ Given that perception arises in a motor-perceptual synthesis, things perceived will emerge in what Merleau-Ponty portrays as a motor-perceptual dialogue⁷⁸ between the perceiver and the perceived, in which the unity of

relation is the most basic element of perceptual experience. There is no hyletic layer of experience: every sensory given already solicits meaningfully shaped responses of the body.

⁷⁷ Lingis 1996, 54. On my qualification, cf. Aristotle's point that "Probably it is better not to say that the soul pities, or learns or thinks, but to say rather that the soul is the instrument whereby man does these things..." (*On the Soul* 1-4-408b12-15, trans. Hett.) Zaner's (1971) analysis of "The Body-Proper as an Instrument of Knowledge," which integrates discussion of the body schema, also gives broad support for this sort of claim.

⁷⁸ The theme of perception as dialogue runs throughout the *PdIP* and continues in the theme of interrogation in *The Visible and the Invisible*. Cf., e.g., Merleau-Ponty's discussion of the interrelation of the sensor and the sensed as the relation between a question and a reply at *PdIP* 248, *PP* 214. Also see his claim "that the whole of nature is the setting of our own life, or our interlocutor in a sort of dialogue," but

sensory properties that bestows thing-hood upon things is anticipated in the body schema through which we explore the world, and is fulfilled through the thing's response to our explorations.

The Body Schema and Binocular Vision

In this work my overall concern is with spatial perception. Merleau-Ponty's account of binocular vision—the seeing of one thing in depth with two eyes—is in many ways cognate to his account of the illusion of the double marble. Since binocular vision is linked with depth perception and spatial perception, Merleau-Ponty's account of binocular vision will serve as a starting point for developing some answers to questions raised in my critical discussions of Descartes's and Berkeley's accounts of depth.

Benedetti suggests that for the psychologist, the question about the illusion of the double marble is put the wrong way round: the psychologist should not ask why we feel two marbles through crossed fingers, but why in the normal case two different fingers that are in contact with different surfaces should feel one unified object. The latter question precisely resembles the classic question about vision, namely, how is it that we see one thing with two eyes.⁷⁹

that on a metaphysical level the thing is “hostile and alien, no longer an interlocutor, but a resolutely silent Other, a Self which evades us no less than does intimacy with an outside consciousness.” (*PdIP* 370-372, *PP* 320-322; see Geraets 1981 for a discussion of the latter quote.) Also see the parallel that Merleau-Ponty builds between the development of perception and the seeker's paradox in chapter three of the introduction, “‘Attention’ and ‘Judgement’,” esp. *PdIP* 36, *PP* 28, and *PdIP* 425, *PP* 371; see Dillon 1988 on Merleau-Ponty and the seeker's paradox. I will discuss this paradox below. Kwant 1963, e.g. p 25 and Langan 1996, e.g. p 31 also take it as a given that for Merleau-Ponty perception is a dialogue.

⁷⁹ Benedetti 1986b. For Benedetti, the parallel between these questions about touch and vision is explicit, which is why he calls the illusion of the double marble “tactile diplopia”; diplopia is double vision that occurs when our eyes cross or when we do not fuse the images given us into a unified scene; in Benedetti's terms, tactile diplopia is a cognate doubling in the realm of touch.

As we have seen, in Merleau-Ponty's account of the double marble, the tactile unity of the marble is not to be explained by intellectual or neurological processing of sensations. I feel one marble when it confirms the unifying grasp that I anticipate in my body schema. Merleau-Ponty argues that a similar intentional and anticipatory schema lies behind binocular vision: vision is a prospective activity, and the unity of things seen is intentional. But this intentionality rests in the body, not in the mind. Merleau-Ponty writes that "We pass from double vision to the single object, not through an inspection of the mind, but when two eyes cease to function each on its own account and are used as a single organ by one single gaze."⁸⁰ The motor-intentional activity through which the eyes become a single organ "is supported by the prelogical unity of the body schema."⁸¹ These claims about the unity of binocular vision are obviously cognate to the claim that in grasping, our body schema communicates itself to the world such that "it is literally the same thing to perceive one single marble, and to use two fingers as one single organ."⁸²

Now I think it is somewhat difficult to understand Merleau-Ponty's argument for his claim, for the following reason. When we analyse binocular vision, we take the optical unity of the thing in relation to our two eyes for granted, and we take it for granted that our two eyes obtain slightly different images of the unified thing. All the traditional accounts of binocular vision start from this fact. *But the fact of the visual unity of the thing for the perceiver is the fact that is to be explained*, as Merleau-Ponty points out.⁸³ Merleau-Ponty's argument is difficult because all he is trying to show is that binocular

⁸⁰ *PdIP* 268-269, *PP* 232.

⁸¹ *PdIP* 269, *PP* 233.

⁸² *PdIP* 237, *PP* 205.

vision can only be explained if the visual unity of the thing is already anticipated by the embodied vision of the perceiver. In our analyses we think that the binocular disparity of the images obviously belongs to the images themselves, and we think that the unification of the images can be and obviously is the result of an operation on the images themselves, in which case binocular vision can be the result of a neurological or intellectual process. But in thinking that the binocular disparity of the images belongs to the images themselves we beg the question, because we forget that our initial judgement that the images are binocularly disparate already depends on our judgement that they are images *of a unified thing*.⁸⁴ On Merleau-Ponty's argument, the perceived unity of the thing is not a result caused because the thing has a unity within a mental-sensory-optical system, which unity can therefore be recovered from images (this would beg the question). The perceived unity of the seen thing is a meaning that is anticipated by our embodiment.

Let me try and clarify the point of this through a contrast with touch. Grasp a wine cork so that your finger and thumb touch the opposite, circular ends of the cork; close your eyes; hold your hand very still for a minute or two with the cork lightly suspended between relaxed fingers; now wiggle the cork between your fingers (which will make your fingers lightly squeeze the cork). The perception of holding a cork—a unified, solid body—fades slightly as the hand remains still, and then becomes much clearer when wiggling the cork. Moreover, in wiggling the cork, you may have a feel for the dry, stiff springiness of the middle of the cork. This seems mysterious, since two separate surfaces touched by the two different fingers are perceived as belonging to one and the same thing,

⁸³ *PdIP* 268, *PP* 232.

and the fingers provide a sense of tangible material (the middle of the cork) that is not in fact touched by the fingers. How are we to explain this? In the case of touch, the scientist would *not* be tempted to say that it is because of the properties of the separate tactile images in the two fingers that we feel one unified thing. In themselves, the tactile images have nothing to do with one another; the fingers touch two different surfaces and we could vary the tactile properties of a solid thing as much as we please, but so long as we get to wiggle the thing between finger and thumb, we will feel it as one thing. According to the theory of perception worked out in the previous section, it is not the intellectual or neurological unification of the separate tactile images that lets us perceive one thing, but the way that the thing, when wiggled or gripped, confirms the explorations of the hand that anticipates grasping unified things—and we do in fact have a more robust perception of the cork when we wiggle it. The tactile unity of the thing is not in the tactile images themselves, but in a motor-perceptual dialogue between the hand and the thing.

Now let us shift back to vision. Two differences between touch and vision mislead most traditional accounts to conclude that the unity of the visual object is quite different than the unity of the tangible object. (A) The visual images on the two retinas overlap, and this is possible because, at a given moment in the typical case, two different visual fields each encompass the single object of interest. In contrast, organs of touch physically exclude one another, and so tactile images cannot overlap; and each tactile image typically covers only part of the object. (B) While the cork directly effects the exploratory motions of the organs of tactile perception (for example, by pushing back against the grip), the thing seen seemingly only indirectly effects the exploratory motions of the

⁸⁴ Cf. Rojewicz's (1984) discussion of the disparity of the images in Merleau-Ponty's account.

organs of visual perception: in the traditional form of explanation, images must first form on the eyes, then be interpreted, and then these results are used to govern the movement of the eyes. That is, the explorations of the eyes—looking—could only be mediated by the result of seeing, so looking cannot precede seeing. Traditional accounts are thus led to the claim that processing of overlapping images of the entire thing can (and must) specify a unified image of the thing, and it is this processing that causes us to see a unified image. The convergence of the eyes in looking is explained by the unified image that we see.

But in themselves, without reference to the body's exploration of things, the visual images are just as separate from one another as are the tactile images. As Merleau-Ponty argues (drawing on the Gestaltists), point by point correspondences of stimuli on the two retinas could not specify the fusion of the two images, since the stimuli would have to be matched as groups that correspond to the same features of the thing seen, and this grouping and matching already depends on seeing a unified thing.⁸⁵ Rojewicz suggests that the supposed point by point symmetry between one eye and the other could not be specified anatomically, since in cases where the eye deviates from its fixation point (strabismus), a new, *functionally* defined relation between symmetrical points on the retina comes into play.⁸⁶ Moreover, vision of unified objects persists (1) when the images on the retina are inverted by prisms, (2) when a detached retina is reattached ninety degrees from its original position, (3) when the optical distance between the eyes is effectively increased through the use of prisms, (4) when the visual field of each eye is left-right reversed through the use of prisms, (5) when the size and shape of objects at a

⁸⁵ *PdIP* 267-268, *PP* 231-232; see Rojewicz 1984, 40-41 for a discussion of this point.

given distance is distorted by the use of goggles underwater, and so on.⁸⁷ It is also questionable whether the overlap of images is crucial to seeing a unified world, even if this overlap is crucial to our refined depth perception: we would not imagine that a horse or a chicken facing a barn sees two barns, even though their visual fields do not overlap,⁸⁸ and here we should remember that our visual experience of a unified world does not 'include' either the blind spots in the middle of our visual fields or the breaks at the edges of the field; also, when we use rear view mirrors or multiple television monitors to view a situation, we integrate multiple views into one visual world (although this takes getting used to). With respect to the simple unity of things, we should probably not think that there is a difference in kind between having a perceptual field that unifies images that overlap (according to some material conception of overlap within a perceptual field), and having a perceptual field that unifies other sorts of gaps and multiplicities. (Undoubtedly there are more refined differences in kind between these sorts of perceptual fields.) This counters point (A) about the difference between the ways in which vision and touch give us unified objects.

The structural differences between touch and vision should therefore not mislead us when we analyse the ways in which touch and vision give us unified objects. Both binocular vision and touch are prospective activities that set up their own standards for unity in relation to things, they do not receive images that in themselves contain this unity

⁸⁶ Rojewicz 1984, 41.

⁸⁷ For points (1) and (2), see Howard 1982 (note that in Stratton's own experiment with inverting lenses, the apparatus was monocular, so we should not make conclusions about binocular vision from his description (see Stratton 1896 and 1897)); for (3) see Fisher and Ciuffreda 1990; for (4) see Ichikawa and Egusa 1993; for (5) see Kinney 1985.

⁸⁸ Cf. Gibson 1979 for a discussion of this point.

in coded form. We have seen examples of this prospective seeking of unity in the amazing plasticity of binocular vision relative to changes in the actual images on the retina—give our two moving eyes what you will, and we will generally see one world. Even when diplopia (double vision) occurs, for example, in the case of paralysis of an eye, and both images of the world first appear unreal, a difference eventually appears between the two images: “one [image] appears solid and articulated in the visual world while the other, which usually corresponds to the paralysed eye, looks ‘unreal’ and ghost-like.”⁸⁹ So it is better to conceive vision as an activity of an embodied perceiver in which the perceiver seeks a unified world, and *in virtue of this* uses the eyes as a single organ to explore one perceptual field, *contra* the view that because there are overlaps in the images on the retina, our brain or mind can engage in processing that *causes* us to see one world. In other words, the movements by which our eyes give us a unified view of the world are *motivated* by our anticipation of a unified world—and these movements amount to a perceptual synthesis that is shaped by the “prelogical unity of the body schema.”⁹⁰ The unity of things seen and touched shows that our embodied being in the world makes many into one, and this is not reducible to an in-itself process. In the phenomenal field shaped by our motor-perceptual anticipations, there are no separate retinal images, but one world of things.

What of the claim that the unification of images does not depend on point by point correspondences on the retina, but on a much more complex system that analyses the abstract visual content of the retinal fields and matches these fields on the basis of

⁸⁹ Heaton 1968, 241.

content? This claim is representative of many current programs in cognitive science, but it is really a more complicated version of the position criticised by the Gestaltists, and it is also a version of the Gestaltist reification of form, which Merleau-Ponty criticises. I will call this program the computational approach. The computational approach runs into circularities that are cognate to the recovery problems discussed in chapter one in the case of depth perception: the parsing of the visual content of the retinal fields depends on the sorts of things that we are looking at and the position and structure of things relative to our bodies; but to have such information about things relative to our body is to already have the information that is supposed to be the result of the process. There is not enough information in the retinal images considered in themselves to uniquely specify unified things. The computational approach must make assumptions about what is important and what is not, what sorts of things there are to be seen, and how things will appear in the given environmental situation in relation to the activities of the body. The assumption about what things there are and how they relate to the body cannot be learnt, first, because learning would depend on these assumptions, and second, because the assumption depends on the perceiver's overall motor-intentional relation to the world, which specifies what there is for the perceiver to deal with and what is important and what is not; the assumption is constitutive of the identity of the perceiver.⁹¹ In general, it turns out that in such a computational approach there are many instances in which information that is supposed to be the result of processing is already required if that processing was to have

⁹⁰ *PdIP* 269, *PP* 233.

⁹¹ See Thompson's work for an excellent discussion of this sort of problem in the case of colour perception.

been successful in the first place (that is, “earlier” effects depend on “later” effects); and these processes thus depend on a prospective activity on the part of the perceiver.⁹²

Unified binocular vision, then, requires prospective explorations that are not governed by the images on the retinas, since the eyes must already *look* at things in the right way if they are ever to acquire the images that let us *see* things as unified. Thus “the sight of one single object is not a simple outcome of focusing the eyes,” the single object “is anticipated in the very act of focusing,” and “the focusing of the gaze is a ‘prospective activity’”; finally, “It is necessary to “*look*” in order to *see* [*Il faut “regarder” pour voir*].”⁹³ This prospective, pre-objective, pre-logical “looking” that allows us to see, then, means that our eyes are already in contact with things. The unity of the visual field is shaped in a perceptual dialogue—our look that anticipates and *desires* unified things, unfolds in response to things that draw our look into a unity. “Monocular images [in diplopia] float vaguely in front of things.... The binocular object, in which the synthesis occurs, absorbs the monocular images, which in this new light, finally recognize themselves as appearances of that object.”⁹⁴

This counters point (B) above, about the difference between the ways in which vision and touch present us with unified objects: just as touch perception is shaped by prospective explorations, through a primordial, tangible contact that grasps the world,

⁹² See for example Patricia Churchland, Ramachandran and Sejnowski 1994 for a recent discussion of such problems and for a “Critique of pure vision,” that is, a critique of attempts to describe vision as a ‘bottom up,’ linear process; the authors argument, I think, suggests that even from the point of view of cognitive science, vision must be an interactive process in which the seer’s prospective interactions with the environment are crucial.

⁹³ *PdIP* 268, *PP* 232, emphases mine; Merleau-Ponty is citing R. Déjean, *Etude psychologique de la distance dans la vision*.

⁹⁴ *PdIP* 269, *PP* 233.

visual perception is shaped by prospective explorations through a primordial, pre-logical “look” that puts us in remote contact with the world. (This is not to suggest that touch and vision are equivalent in other respects, just that there is a broad homology in the perceptual synthesis that unifies things in touch and vision.) The multiple faces of the touched thing appear as belonging to a unified thing when the thing confirms the unity anticipated by the converging sensory surfaces of multiple fingers, which fingers work together as a single organ that synthesises the tangible world as already containing things to be held. The different visual faces of the seen thing appear as belonging to a unified thing when the thing confirms the unity anticipated by our converging eyes, whose looking beams form a synthesising perceptual field whose labile unity *qua* motor-perceptual organ is governed by the anticipation that the eyes will reveal a unified visual world. In both cases the shaping of the explorations of the motor-perceptual organs *qua* anticipatory depends on a pre-objective, pre-personal interpermeation of the body and the world: the tangible world already sparks off our fingertips, the visible world already flows out of our exploring eyes. We paint the visual world with our embodied vision, in response to the solicitations of the world.⁹⁵

⁹⁵ This, I think, is one reason why Merleau-Ponty is concerned to give a metaphysical study of painting. We paint with our bodies. So painting reveals that we only see because our bodies are already visible, and thus our vision is an embodied vision. (Cf. *OE* and “Cézanne’s Doubt”; also cf. Collingwood’s (1983, 144-146) analysis of Cézanne painting with the body; see also Madison’s (1981, chap. 2) study of Merleau-Ponty and painting.) Also see Merleau-Ponty’s comment in *PdLP* that his doctrine of vision is in some sense a return to the Platonist’s doctrine that vision is emitted from the eyes.

On the notion that we paint the visual world with our embodied vision, remember once again that we see neither our blind spot nor the edges of the visual field. Also cf. Merleau-Ponty’s discussion of the proof-reader’s illusion (*PdLP* 28-29, *PP* 20-21). Compare the report in Patricia Churchland et. al. 1994 (37-38) of an experiment in which the reader sees a moving window of text on a computer screen, surrounded fore and aft by “junk” text; as readers move their eyes along the line, the window of text moves with them, revealing new portions of readable text. In the typical case, if the English reader is shown 2-3 characters of text to the left of the point of fixation and about 15 characters to the right, with “junk” text surrounding this “window,” readers read just as well as when the whole line is visible; this asymmetry is reversed for readers of Hebrew, and is up and down for readers of Japanese. The visual identity of a page of text is not fully specified by the

The Body Schema, Depth Perception and Place

This analysis of binocular vision and the body schema leads to some quite important insights about depth perception and spatial perception, specifically about the motivational shaping of the phenomenal field in visual or haptic depth perception.

In perceiving a unified thing in touch or vision, our body schema communicates itself to the world, in response to the solicitation of the thing, in such a way as to have our sensory-motor encounter with the thing already constitute the thing as being a perceptually unified thing for us. This perceptual activity has two 'transcendental-existential' conditions. (1) We must already be in a primordial, pre-objective, anticipatory contact with the thing: in order to touch, we must already grasp; in order to see, we must already look.⁹⁶ (2) To perceive a thing, our bodies must modify our pre-objective motor-perceptual relation to the thing in a very specific manner. As Lingis puts it, to see a thing as a thing "is to position oneself before it and converge one's sensory surfaces upon it," and to recognise a thing such as a lemon is to "know how to approach such a thing." Our lived body, then, is our medium of perception, and it can be this medium in virtue of it having a pre-objective contact with things, through which it engages with things. But the perceptual movement from pre-objective contact to perception of things is a motor-perceptual activity in which our body takes up a certain pre-objective, positional approach to things.

page in itself, but is 'painted' onto the world in the activity of reading, which is pre-eminently a dialogue, in many different respects.

⁹⁶ Here I put this condition in terms of the perceiver, but it is quite important to realise that the thing must already have a very specific ontological character *in relation to us* if it is to solicit us, and if our perception is to truly be of things as they are. Otherwise we lapse into a sort of bodily idealism. This ontological issue elides with an epistemological issue, and both are difficult. See Pietersma 1989 and

The ‘transcendental-existential’ condition of having unified coherent things given to us in perception, then, is that we already take up a certain pre-objective comportment toward things with our lived bodies. This pre-objective comportment, as I will show, constitutes a bodily space with a primordial depth. It is not the case that we are first presented with unified things, and because of their unity we turn toward them in a certain way that gives us signs of depth (as in a Cartesian inferential account); nor is it the case that our interpretation of signs as belonging to unified things also intrinsically specifies information about their depth (as in a Berkeleian intrinsic account). Rather, the very ‘transcendental-existential’ condition of perceiving a unified thing is a bodily comportment—an activity—that gives the thing a primordial depth in relation to the lived body. This comportment already establishes motives for depth within the phenomenal field.

In experiential terms, to see a unified thing is to already unite our eyes in a looking that directs our body to a place infested with sensations that we anticipate as belonging to a unified thing. Our looking is thus a positioning and directing of the body that articulates the place in which we might perceive a thing; so our look sees things in place. It is not because we see a thing that our eyes turn, but a thing’s pre-objective solicitation motivates our look to open up a place in which a thing can be seen. Normally we do not notice this dependence of seeing on looking, but it is apparent when we are unsuccessful at seeing: it is not until my friend shows me how and where to look at the splotches of colour that I can see the bird hidden amongst the branches, and then the bird materialises

Pietersma 1990; also see Geraets 1981 for a discussion of the reality of the thing in relation to Merleau-Ponty on depth.

in the place that my look has opened up.⁹⁷ And Schneider, for example, can only see his doctor's house when he is consciously looking for it, not when he is walking by on a stroll, which we could say is either in virtue of the fact that Schneider can (in many respects) only have pre-objective relations to practical objects, or is in virtue of the fact that he does not really have pre-objective relations to things at all. In the normal case, the habits of looking that are captured in our body schema put us in a pre-objective relation to the world such that things guide our look to see them, without need for self-conscious reflection on our part, and this looking opens up places for things.

To frame this point in a larger context, Merleau-Ponty's theory of perception is a theory in which perception is shaped by the body schema. We do not perceive with independent senses that are integrated through an associational or intellectual process, but with a lived body that has the power of being pre-objectively related to the world, and thus anticipates a unity of the world through its motor-perceptual being in the world. "The subject of sensation is neither a thinker who takes note of a quality, nor an inert setting which is affected or changed by it, it is a power that is a co-nascence with its existential environment, or is synchronised with it."⁹⁸ The medium of perception is the lived body as an integrated anticipatory whole, not a system of sensory and motor organs. Therefore it is one and the same for the perceiver to perceive a thing as unified, and for the perceiver

⁹⁷ Cf. Levy's (1993) discussion of the anthropologist's report of the BaMbuti tribesperson who, when looking at a buffalo on the plain from the top of the hill asks "What insects are those?" If this report is veridical, it strongly suggests that seeing on the plain requires a different sort of looking than seeing in the dense forest that is the usual environment of the BaMbuti. It is worth noting here that the buffalo are seen as living beings in the unfamiliar situation.

⁹⁸ *PdIP* 245, *PP* 211. In the French, the last part of this reads: "*il est une puissance qui co-naît à un certain milieu d'existence ou se synchronise avec lui.*" Merleau-Ponty uses this word play on "*co-naît*"—to be co-born (*naitre*) and to know (*connaître*)—in the earlier work *SdC*. There he cites Paul Claudel's *Art*

to have a pre-objective relation to the thing through particular motor-perceptual behaviours of the body that converge on the thing—both moments are co-integral to the constitution of a “setting of co-existence” with things.⁹⁹ *To perceive a thing is thus to put it in place relative to the lived body.* Once we understand that the medium of perception is the lived body as an anticipatory whole, that the subject of perception is the body subject—or as I would prefer to put it, that the perceiver is an embodied perceiver—we see that the body is, as Casey puts it, a place for things.¹⁰⁰

It is important to see the general ‘transcendental-existential’ argument behind this point. It may seem to be an accident of my examples—in which two fingers or two eyes must work as one—that perceiving a unified thing necessitates that the body’s motor-perceptual activity unify multiple organs into one organ, which unification pre-objectively articulates a place for the thing within a bodily space. But the perception of any thing as a unity requires that multiple organs or parts of organs work as one organ that is unified in our motor-perceptual activity. The point of Merleau-Ponty’s argument that the figure-ground relation is the “very definition of perception,”¹⁰¹ and the point of his argument against the constancy hypothesis is that no constellation of sensations could in itself give rise to a unified perception of a thing. And the doctrine of the body schema is precisely required because it shows how the lived body as anticipatory of unified things in the world is the third term in the figure-ground relation. The body’s anticipation of perceptual

Poétique: Traité de la Co-naissance au Monde et de Soi-même. See *SdC* 213, *SB* 197. “Co-nascence” is Fisher’s translation of the term in *SB*.

⁹⁹ Cf. Merleau-Ponty’s comment about why he has adopted the thesis that every sensation is spatial, *PdIP* 256, *PP* 221: sensation as form of primordial contact with being is constitutive of a setting of co-existence, that is of a space, because this contact is achieved through the body.

¹⁰⁰ Cf. Casey 1991a 16-17.

wholes must be prospective and fleshed out in the body's direction of itself toward things; we do not perceive with an abstract grid of sensations, but with a body that reaches to the world. But shaping a multiplicity of organs into a motor-perceptual unity means bringing the body together toward things. Thus every perception of a unified thing is correlatively a direction of the body to the thing, which places the thing in relation to the body. Or more broadly, the body is physically spread out in space; but the lived body is an anticipatory whole in which "parts are not spread out side by side, but enveloped in each other"¹⁰²; such functional envelopment can only be brought about in the body by having parts in space work as one, and this already refers the functional envelopment of these parts to a place outside the body that these parts are united toward. To perceive a unified thing, then, is to perceive it in a place that is coupled to the body's motor-perceptual directedness toward things. "Every external perception is immediately synonymous with a certain perception of my body, just as every perception of my body is made explicit in the language of external perception."¹⁰³ With this 'deduction' we have moved past binocular vision to all motor-perceptual activities in which we unify the body toward things: each such unifying act places things within bodily space. From here on, then, my discussion will have implications for depth perception in general, not just for binocular acts of visual depth perception that depend on two eyes (but which binocular acts are not on that count reducible to the fact that two eyes are used).

¹⁰¹ *PdIP* 10, PP 4.

¹⁰² *PdIP* 114, PP 98.

¹⁰³ *PdIP* 309, PP 206. I would like to suggest here that this 'deduction' has some relation to the concepts of chiasm and reversibility in *The Visible and the Invisible*, when we place the deduction in the context of the ontology of a body that shapes itself in the world.

The above, then, is a ‘transcendental-existential deduction’ of bodily space, that reveals the necessary implications and meaning of a seeming contingency of our existence, namely the spread of our physical organs in space: since my organs are spread out, in order for me to refer my sensation to a thing outside me, that is, to perceive a unified thing, my organs must envelop one another. I, *qua* embodied perceiver, must already bring my body together toward the thing, and this necessarily places the thing outside me in relation to my lived body. Place, in this sense, precedes things, even though place depends on the things that solicit us to open places. The space of places in which I thus place things, consists of places that each reflect my body’s comportment in space, and each such place is given in a pre-objective relation to my body. This space of places, then, is *bodily space*, and this ‘deduction’ thus shows how the fact that perception proceeds through the motor-perceptual-intentionality of a body spread out in space, means that our bodies are *of* space. “Experience discloses beneath objective space, in which the body eventually takes up place [*prend place*], a primitive spatiality of which experience is merely the outer covering and which merges with the body’s very being. To be a body is to be tied to a certain world, as we have seen; our body is not primarily in space: it is of it.”¹⁰⁴ Our capacity to perceive space is intrinsically reflective of the fact that our bodies have volume and spread in space. But our bodies are not in space, but *of* it, since perception envelops parts spread out in space within a living unity, and thus encloses our body in a bodily space that is already integral to perception.

The body schema’s shaping of the body’s manner of being *of* space thus specifies a space of places in which we perceive things. This, I think, is the space whose measure is

¹⁰⁴ *PdIP* 173, *PP* 148

the primordial depth that Merleau-Ponty claims must be found beneath “objectified depth” if we are to understand depth perception. Every placement of a thing in relation to the body involves a separation between the body and the thing. Each such separation is constituted in the motor-perceptual process of placing a thing so as to be perceived by the body. These separations, then, have a ‘thickness’ that directly reflects the mutual relation between the lived body and the thing in the perceptual co-synthesis of body and thing: the thing is separated from the body in a way that directly reflects the body’s prospective seeking to fit the thing within the grasp of the body. But this separation, which describes a depth relative to the depths of the body, is primordial. It is primordial in the sense that it is not objectified, since the depth that separates the perceiver from the perceived is given through a pre-objective relation, before the body or thing are constituted as either subject or object. This depth is also primordial in the sense that it is prior to other spatial dimensions of things: it is only in virtue of the thing being placed outside the body as a unified thing that it can have *its own* objective height, breadth and depth; and parts of our lived body do not have their own objective height, breadth and depth, unless we approach our own lived body as a thing.¹⁰⁵

In this primordial depth, we might be able to, for example, specify broad distinctions between the far off and the near (the far off requires an opening or extension of the unifying organ in relation to the thing, while the near requires a closing and retraction) and the large volume and the small volume (the small volume fits within the unifying organ, the large exceeds the unifying organ, so only part of it can be unified, only this unification anticipates continuous explorations of a larger volume that gives the

¹⁰⁵ See Leder 1990 on this point.

part its unity); perhaps we could also specify gradations in between. This suggests that the body schema's shaping of bodily space is also a shaping of primordial depth as a constitutive dimension of being in the world; and it suggests that the placement of things in primordial depth is a constitutive activity that is achieved through anticipatory motor-perceptual relations.

But the placement of things in primordial depth could not on its own, as Casey suggests, give things an objective depth.¹⁰⁶ It only gives things a depth relative to the body. Let me try to pursue this problem in some more detail by taking up another suggestion of Casey's, namely that for Merleau-Ponty the mutual envelopment of surfaces in things is a crucial motive for depth (Casey notes that this is strikingly similar to Gibson's notion of the layout of surfaces as an affordance for depth).¹⁰⁷ I think we could put the point about envelopment in the following way: the surfaces of a thing exclude and envelop one another; one side of a cube is not the other side of a cube, and the visible surfaces of a cube envelop the back surfaces; to see a cube in depth is thus to see a thing in which all surfaces are not visually present immediately, but present in ways that exclude and envelop one another; but nonetheless, all surfaces are present in that I perceive a cube, a thing with six sides.¹⁰⁸ Similarly, in a layout of things, things that occlude each other from our point of view, envelop one another.¹⁰⁹

¹⁰⁶ Casey 1991a

¹⁰⁷ Casey 1991a, 12.

¹⁰⁸ For Merleau-Ponty's discussion of perception of a cube in depth and envelopment, see *PdIP* 304-306, *PP* 262-265.

¹⁰⁹ But to see one thing as occluding another requires that we already unify them in depth—it is not enough to say, as the Gibsonians do, that occlusion is an affordance for depth, since a flat display which generates an occlusion is enough to make us see one thing as behind another. I do not see the occluding

I would now like to suggest a relation between bodily space and the structures of envelopment that we find in things in depth. The body's placement of things around it in bodily space depends on motor-perceptual syntheses of things, which syntheses are equally motor-perceptual syntheses of the lived body. So we can see why Merleau-Ponty would claim that when it comes to analysing perceptions of things like cubes, "The thing, and the world, are given to me along with the parts of my body, not by any 'natural geometry', but in a living connection comparable, or rather identical, with that existing between the parts of my body itself."¹⁰ Since every motor-perceptual synthesis of a thing is at the same time a motor-perceptual synthesis of the lived body, the perceptual geometry of the perceived world, or at least of bodily space and primordial depth, reflects my body schema, the 'geometry' of my lived body in the world, not a natural geometry. Now the unity of parts of my body is one in which "they are not spread out side by side, but enveloped in each other." What might this envelopment of body parts reflect when it comes to the living geometry of bodily space?

I think this reflects at least one aspect of the 'geometry' of bodily space, namely that the unity of the thing in relation to the body is equally the mutual envelopment of the body's surfaces and the mutual envelopment of the thing's surfaces. (This discussion once again takes the form of a 'transcendental-existential' deduction.) Above, I construed the mutual envelopment of parts of the body as referring to a functional unity in which multiple parts work together (become internal to one another) in opening up a place for a unified thing. In such an envelopment of body parts, sensory surfaces that could contact a

edge of a wipe in a movie as one thing in front of another, I do not see the shadow moving across the wall as in front of the wall but on the wall; oclusions can motivate depth order once I have anticipated a certain ontology of things.

multiplicity of things are directed so as to anticipate perceiving one thing. Now the mutual envelopment of multiple surfaces of a thing (or multiple things in layout) is not given in sensation itself, any more than the unity of a thing is given in sensation itself (cf. the above discussion of binocular vision). In fact, the grounds for envelopment are the same as those for unity. The sides of the marble envelop each other when I explore the marble with unified fingers, but not when I explore it with crossed fingers; crossed fingers cannot envelop each other in a unified activity that opens up a place for things. In normal vision the sides of a house meet at an edge such that the one edge occludes the other as I move around the house, and thus the surfaces envelop one another in a particular way that motivates me to see the house in depth; but when I let my eyes go from things and experience diplopia, the two surfaces float out, and no longer envelop one another, but are indifferent to one another, and it is as if the sides of the house (that I know is there) fall outward and flatten. If I drape my fingers close to and over one eye, and do not try to bring my fingers into perceptual being as things, then my fingers become ghostly and float over the background; the fronts of the fingers do not envelop the back. And a surface that I touch with one hand or see with one eye consists of planes that envelop one another, forming solid surfaces, in virtue of my hand or eye working as a unified organ that touches or sees unified things. Surfaces of a thing envelop one another in virtue of my directing my body to places in which such surfaces belong to one thing. So it is not *because* surfaces envelop each other that I touch or see a thing as being in depth; it is in virtue of my grasping or looking in a certain way that the surfaces of things envelop each other and motivate my touching or seeing in depth.

¹¹⁰ *PdIP* 237, *PP* 205.

But this envelopment of surfaces and the unity which these surfaces envelop can only be given with reference to a thing that has its own place. It is not my placing of the thing in bodily space that makes it *be* a thing whose surfaces envelop one another for me. It is in virtue of the thing soliciting me as occupying its own place that I direct myself toward it so as to place it as a thing whose unity is such that its surfaces envelop one another. And this initial solicitation in which the thing pre-objectively appears as occupying its own place requires that I and the thing both occupy a *larger place*¹¹¹ that separates my body from the thing and holds me and the thing together in a relation. As I move around it, the thing keeps on soliciting me to place it in a place outside of my body; in this way it solicits me to put it in its own place. (It is only if I immobilise my eyes or defocus them, or all of a sudden lose my directedness toward the world, that, for example, the colours that I see flatten out so that they do not belong to surfaces of a thing in its own place, or “diffuse around objects and become atmospheric colours,” that is, it is only in such cases that colours appear in primordial depth.¹¹²) The larger place that relates the perceiver to things is in fact a ‘transcendental-existential’ condition of the primordial depth of bodily space: the constitution of primordial depth depends on a place that holds the perceiver and thing *together*, thus allowing the perceiver to have a motor-perceptual

¹¹¹ Casey calls such a “larger place” “region” in Casey 1991a, and Casey 1993 makes a distinction between various sorts of place. Here I will just talk about larger place.

“Larger place” refers to what otherwise would be called the ‘spatial’ aspect of world or horizon. I follow Casey in speaking of place, rather than space, since as Casey argues, our concept of space abstracts from lived experience, and from the concreteness that place has beyond us. I prefer to speak of place, rather than world or horizon, in order to avoid some of the intellectualising tendencies that emerge within the phenomenological tradition when it comes to world and horizon. In this sense my choice of terminology is cognate to my choice of “the perceiver” or “the lived body” over “the body subject” or “the subject.” The larger place beyond my lived body as a place for things, is akin to a lived body outside my lived body, and it is thus a fact of my existence that is never entirely absorbed into my projects; it is a motive within my projects.

¹¹² Cf. *PdIP* 308, PP 266.

relation to the thing in the first place. But this very same place also *separates* the perceiver from the thing, so that the thing is not encrusted into the body of the perceiver. Thus the solicitation that places the thing in bodily space is already a solicitation that can place the thing within a larger place: the motor-perceptual activity through which the perceiver unifies the thing also motor-perceptually detaches the perceiver from the thing within the larger place that holds them. This separation becomes explicit when the perceiver moves relative to the thing or the thing moves relative to the perceiver. Given that perception of a thing in primordial depth must occur in a larger place that holds the thing and the perceiver, once the thing acquires a unity within primordial depth, movement between the perceiver and the thing can solicit the perceiver to perceive the thing as being in a place distinct from the bodily space of the perceiver.

For example, the movement of my eyes toward the thing both unifies the thing and places it within bodily space, giving it a primordial depth. But this movement of my eyes also shows my detachment from the thing through the distance sense of vision, and thus puts the thing in its own place. The thing ‘peels’ away from me as I converge toward it. This becomes explicit when I move around the thing, or it moves relative to me, and it *stays detached from me*: the unity that I give the thing through my eye movements is ceaselessly demanded by the thing and constantly places the thing at a certain primordial depth. The thing thus surpasses me and demands a unity in which *its* surfaces peel back, envelop and consume one another in the thing’s place. (This would be opposed to a unity in which a vague surface in primordial depth undergoes systematic colour changes, or in which surfaces rotate away from us in a quasi-objective space. The latter experience sometimes occurs when our looking is detached from visual motion through a place, for

example, when we watch the landscape passing by through the rear view mirror from the passenger side of a car, or similarly, when we watch a film in which trees at the side of the road are shot at medium distance from a moving vehicle, without showing the ground: the landscape seems to float by and rotate away from us in an abstract space, rather than placing itself as a solid thing in place.¹¹³) So the fact that I pre-objectively place the thing at a certain primordial depth from me, and that it remains at such a primordial depth when I move relative to it *within a larger place* that holds both me and the thing, gives the thing its own sense of place, and means that its appearance as a unified thing is equally its appearance as having surfaces that envelop one another.¹¹⁴ (If I could look at the house across the street as being placed only in bodily space, as not demanding a detachment from me within a larger place, then it would not appear as having enveloping surfaces belonging to a thing.)

Within a larger place that holds us and the thing, in virtue of movement between ourselves and the thing (which movement is enabled by the larger place), and in virtue of the fact that we perceive the thing through parts of the body that envelop one another, the thing appears as being in its own place with enveloping surfaces. This appearance is a motivation immanent within the phenomenal field, in virtue of which we perceive the thing in objective depth. Thus the ‘lived geometry’ of the body in place

¹¹³ See Stan Brakhage’s film series *Vision in Meditation* for a film in which this phenomenon is quite apparent—the landscape becomes a floating surface that rotates in an abstract space. For an extreme case of such a phenomenon, see Michael Snow’s films \leftrightarrow and *La Région Centrale*, in which the inhuman motions of the camera ‘eye’ sever surfaces from things in places; at the end of *La Région Centrale*, the landscape beneath the whirling camera congeals into a sphere that seems to hover in space (cf. Elder 1989).

¹¹⁴ This analysis, I think, could open a response to the problem that Casey raises about Merleau-Ponty claims about occlusion and place in “Eye and Mind.” (Casey 1991a, 20) It also, I think, might add to an analysis of the thing in Merleau-Ponty and to epistemological questions about ‘style,’ insofar as it suggests

shapes motivations within the phenomenal field, with respect to depth perception. In chapter three I will conceive the 'lived geometry' of the body in place as the 'topology' of the lived body.

But explicit movement is not necessary for things to congeal in their own place, and here is where motor-perceptual maxima come into play, I think.¹¹⁵ To the degree that the thing unified within bodily space in a given situation appears as a thing *for* the body within that situation—a thing that the body can work on, manipulate or move around—the thing already appears as detached from the body with respect to the motor-perceptual possibilities that exist between the body and the thing. In other words, to the degree that the thing's unity already captures the motor-perceptual possibilities available to the body relative to the thing in the situation, these possibilities do not need to be made explicit through motion between the thing and the body (although the body-thing possibilities always refer to the place that provides these possibilities). These possibilities are, as it were, coiled within the thing that appears for the body. When this degree of motor-perceptual possibility is highest—when we have the maximum grip on the thing—the thing will appear as most having its own place, because to unify it within bodily space is to already unify it as having its own manipulable substance. When the ball appears as a ball (rather than a disk) in the lit situation, its surfaces already envelop each other in virtue of presenting possibilities of manipulation to the body—the ball is rotatable in place. In such cases objective depth is given through the richness of the motor-perceptual activity through which we place the thing, only this richness refers to possibilities that are

that 'style' is a situational specification that arises in the motor-perceptual system: perceiver-perceived-place.

not wholly enclosed in bodily space, but to possibilities between the body and the thing in a larger place. Thus we can define objective depth “in terms of the situation of the object in relation to our power of grasping it,” where the maximum of grip, of motor-perceptual possibilities, motivates a closer distance, and increasing distance expresses the fact that “the thing is beginning to slip from the grip of our gaze and is less closely allied with it.”¹¹⁶

To bring out the significance of the sort of claim made above, in traditional accounts of depth perception and spatial perception, the determinations that we perceive are conceived as determinations that make space into a system that stands immediately between ourselves and the thing, in the sense that these determinations can be specified in relative abstraction from all other relations between ourselves and other things, and from the relations between the thing and other things.¹¹⁷ The claim that a larger place in which we are motor-perceptually related to things is integral to depth perception means that the determinate depths that we perceive do not belong to an abstract space, and do not run between us and our object. *Determinate depths belong to a space inseparably rooted in our being in place*, and run through the place that holds us together with the things we perceive. Our sense of depth varies as we do different things in different places, because

¹¹⁵ See Geraets 1981 and Mallin 1979 for more on maxima (Mallin treats these through the concept of distance levels). Also see Casey 1991a.

¹¹⁶ *PdIP* 302-303, *PP* 261.

¹¹⁷ Ibn Al-Haytham’s account does not do this, since it refers to place. Berkeley’s account tries to reattach vision to place through the haptic moving body that touches the world, but Berkeley’s tactile space ends up being an idealised space (a placeless place), and the connections between vision and touch also end up being idealised.

depth belongs to place. As Casey writes in his argument, “*place grants depth.*”¹¹⁸ Here it is important to observe that it is only in laboratory constructed situations that we perceive placeless space, and this sort of placeless spatial perception is different than natural spatial perception; cues as sufficient causes for spatial perception are in all likelihood artefacts of the placeless space of the laboratory. Gibson’s crucial insight is to move psychology out of the lab and into the world, to observe us perceiving in place; but Gibson makes place into a thing whose meaning is determined by the physical interaction of our bodies and energy in the environment. But the space that we perceive is not a physically defined void that holds ourselves and things, it is grounded in a place that connects us to things through our bodies and our relations to others. What I want to emphasise in what follows is that the place of spatial perception is a place of doing things and a human place of being in the world, it is not an in-itself but an ‘instrument’ of motor-perceptual intentionality.

Now the theoretical discussion above, I think, makes a very difficult suggestion about depth perception, and I venture it somewhat hesitantly *qua* quasi-theoretical deduction about our relation to space; but the phenomena that I analyse in the next chapter will support the claim that a larger place of doing things and our relation to it enters into our perception of depth and orientation. Several remarks are required in order to move on.

First, in this account I think we see a cognate to the motivated settling of the relation between apparent size and apparent distance (the problem of this relation was discussed in the final portion of chapter one). If we abstract from the fact that our

¹¹⁸ Casey 1991a, 14, emphasis Casey’s.

relations to things are situated in a larger place that demands a certain sort of bodily relation to things, and abstract from the fact that the richness of things for our body already points to possibilities of motor-perceptual manipulations within this larger place, then unifying a thing in bodily space gives it a specificity, but only in primordial depth. This specificity has no objective meaning: the thing that appears as far and as having a small volume in primordial depth could, objectively speaking, be a small thing close up or a big thing far away. But in fact we are implaced relative to the thing, and when the motions that it solicits from us within our larger place of doing things are tiny, and when its surfaces quickly envelop one another when I make small movements relative to it, or if its fine detail within bodily space puts it within a realm of tiny manipulation, it settles in its place as a small thing nearby that has a size that belongs to it in its place.¹¹⁹

Second, when wielding a thing in hand with closed eyes, I would suggest that the body itself as a place for doing things serves as the larger place that gives an objective sense of depth to things.

Third, with respect to vision, the lighting of a place is a kind of motion integral to the motion of the eyes that motivates us to put things in place. This is suggested both by Gibson's studies and by Merleau-Ponty's study of colour and the logic of lighting. But the

¹¹⁹ Cf. Merleau-Ponty's remarks about the size and distance of things relative to the body at *PdIP* 308, *PP* 266.

The sort of account that I give here could perhaps serve as the start of further account of the moon illusion (that the moon on the horizon is bigger than the moon at its zenith). For an extensive collection of recent scientific articles on the moon illusion, which the editor acknowledges as being unsatisfactory, see Hershenhorn 1989. For Merleau-Ponty's excellent discussion of the illusion, which argues that it is not the same to see the moon on the horizon as it is to see it at its zenith, and that the two 'sizes' of the moon are not in fact comparable—a claim that is not considered in the accounts in Hershenhorn's book—see *PdIP* 39-40, *PP* 31.

logic of lighting depends on our anticipatory looking that opens up places for coloured things in relation to light.¹²⁰ So a treatment of light would be crucial to the above account.

Fourth, as I noted in the beginning of this chapter, the account of the unity of things that I give here will not do for the account of the perceptual unity of other human beings. If motion and grasp are exemplary of the motor-perceptual activity through which we perceive things, the *caress* is exemplary of the motor-perceptual activity through which we perceive humans—and the caress already feels for the other as having her or his own sensing, living place within the place that holds us together with one another. This is in virtue of the fact that the caress is unified as a feeling for an other, which feeling can be accepted, rejected or ignored by an other. So if we were to pursue the above stream of discussion within a larger framework, we would have to give an account of the demand that our very movement toward others already puts on our motor-perceptual behaviour; this account would have to attend to the metaphysical dimensions of the relatedness of human bodies, which is thematised in sexuality, and would also have to attend to the imperative that we find in our encounters with others.¹²¹

Fifth, in general this account requires that the larger place that holds the thing and the body be integral to the motor-intentional process of perception. The body schema shapes the ‘lived geometry’ of the body, and hence shapes the phenomenal field so as to anticipate places for things within bodily space; this motivates the meaning of pre-objective depth, or pre-objective relations within bodily space. But it is the way that these

¹²⁰ On the logic of lighting in Merleau-Ponty, see Mallin 1979, chap. 3, esp. sec. 3.

¹²¹ On the latter, see Merleau-Ponty’s discussion of the “The Body in its Sexual Being” and “Others and the Human World” in *PdIP*, in relation to Sartre’s discussions in *Being and Nothingness*. Also see Lingis’s “Imperatives” in Lingis 1991, and Lingis’s work in general.

things occupy such places, given the relation between the thing and the body within a larger place for doing things, that motivates objective determinations of depth or other relations within space. This, I think, leads to the same conclusion as Casey's argument that objective depth arises in the relation between the body as place and the larger place that contains the body and things. If we could show a connection between the body schema as shaping a bodily place for things, and the body schema as placing itself within a larger place, and show that this connection is vital for spatial perception, then we could get past the problem that Casey raises about Merleau-Ponty's primordial depth, namely that it is difficult to see how Merleau-Ponty can get from primordial depth to objectified depth.¹²² This connection between the body schema and a larger place would show how placement in primordial depth can at the same time be a placement of a thing in a larger place, which would give depth objectivity. But the account that I have given above would not succeed in showing this connection if the larger place were external to our embodiment. The larger place must be a place for doing things, which is thus integral to the lived body. I have shown how the placement of things in bodily space is due to a motivational shaping of the phenomenal field that is shaped by the body schema, but if getting to objective depth through bodily space depended on an *objective, spatial* relation to a larger place, then we would be begging the question. My account would thus collapse into another cue-dimensional model, as I have suggested in my criticism of Gibson, who makes place into a physical environment.

Now I do not wish to pursue the above account any further through a theoretical discussion, through the difficult method of 'transcendental-existential deductions' that I

¹²² Cf. Casey 1991a 9-13.

have ventured into above. Such ‘deductions’ seem to illuminate the phenomena, but they also seem to veer into tautology, precisely because they are supposed to show the essentiality of what is before our very eyes, they are supposed to show the necessity of contingency, to “put essences back into existence.”

Instead, in the next chapter I will show how we can conceive this deduction as revealing a certain ‘topology’ of the lived body, a fact about the ‘lived geometry’ of the body in place that motivates the development of a body schema in which this fact acquires meaning with respect to the depth and spatiality of things. This meaning is communicated to things by the body schema when we perceive things; thus the topology of the body motivates the motivational shaping of the phenomenal field with respect to spatial perception. In the next chapter I will elaborate an account of spatial perception that follows this paradigm, through a study of orientation perception and a study of distance perception (by distance I mean depth *qua* belonging to place, rather than depth as separating us from things). These studies will show how orientation and distance perception are shaped by a topology of the body, and how the places that contain us are integral to our perception of orientation and distance, specifically that these places are integral *qua* place for implacing ourselves and moving about. The place around us in which we do things can thus be incorporated into our life as a ‘larger body’ outside of our own natural body. Understanding this account of the topology of the lived body requires the introduction of the concept of what I call “world-instruments”—features of the place that we are in that become integral to the body schema. But understanding the concept of “world-instruments” requires an understanding of the development of the body schema through the acquisition of habits, and an understanding of how the reorganisation of the

body schema can amount to the formation of a new motor-perceptual organ of the lived body.

What I will do next, then, is discuss habit and the development of the body schema. This will allow me to introduce the concept of world-instruments at the end of the chapter. It will also allow me to explain the lability of perception, which was a problem pointed to in the first chapter.

Habit and the Lability of Perception

In the theory of perception described above, perception is shaped by the body schema. As I have shown, this theory goes some way to getting past the problems of Cartesian inferential accounts of spatial perception, and Berkeleian intrinsic accounts of spatial perception. However, I have not yet given a description of the body schema that says what the body schema 'is,' except to say that it is a principle of the lived body, namely the kernel of a power in virtue of which we are already involved with the world. Moreover, one of the problems of depth perception specified in chapter one is that depth perception is *labile*, and that it is not disconnected from the meaningfulness of our being in the world. Depth and other aspects of space are not specified by dimensions that are external to us, but are constituted as meaningful expressions of our being in the world. If the body schema is some sort of motor program, then the above account of spatial perception will end up being a new version of an intrinsic or inferential account. But I have suggested in many places that the body schema is anticipatory and intentional. What I would like to do now is show that the body schema as principle of the lived body should be understood as

a habit of the lived body, specifically as the primordial habit of our lived body. Habit is a peculiar sort of power of being in the world that is both bodily and intentional, both an immanence in the world and a transcending temporality; habit has the ontology that captures the ontology of the body schema *qua* an anticipatory, intentional principle of the lived body.¹²³ I believe that the discovery of habit beneath the body's behaviour is one of Merleau-Ponty's important achievements, and that the concepts of habit and the body schema are a significant but submerged thread in the weave of the *Phenomenology of Perception*. Casey argues that "habit is a key to the ontology being developed in *The Phenomenology of Perception*."¹²⁴ I also believe that Merleau-Ponty thought that habit and its role was a significant discovery.¹²⁵ What I would like to do here, then, is make some suggestions about this thread of habit in the *Phenomenology* and relate it to the thread of the body schema and perception. Conceiving the body schema in terms of habit will show how the body schema is labile, how perception can break down, and show how natural organs, technical instruments, and the place in which the body is situated can all be incorporated into the lived body as 'instruments' of being in the world. The latter point will be crucial to the next chapter and to showing how place is integral to the lived body's sense of space, as discussed above.

Before I begin, a word on my use of the word "habit." I conceive habit as a broad spectrum of nested capacities. At the lower limit we might find something we might not want to call a habit at all, since it is 'autonomic,' for example, the beating of the heart.

¹²³ Cf. Casey 1984 for an excellent study of habit, habitual body, and the important difference between the ontology of representational memory and habitual memory.

¹²⁴ Casey 1984, 289.

But such processes do enter into habits: habits of meditation may include changes to heart rate; the Olympic archer shoots between heart beats; and Katz argues that the blood that rustles through our veins moves our fingers slightly, thus allowing surfaces to appear when our hands are still, so the heart modifies basic habits of touch.¹²⁶ Toward the higher limit we perhaps find sophisticated capacities and attitudes that we might not want to call habits: reading, writing, and typing, mannerisms of speech and body language, and even ways of thinking, methodologies, prejudices, and so on. In the middle we might find various different general and specific capacities: our ability to walk or drive, our habitual way of driving this route, and so on. The higher habits would seem to depend on the lower ones. We would generally tend to differentiate these behaviours by assigning them to different categories, for example, by categorising them as capacities, skills, abilities, competencies, etc. A full study of the ontology of habits would require a careful discussion of the interrelation and specification of these different categories. I would argue that these different categories belong to one scale of habits.¹²⁷ In what follows, though, I am mostly interested in habits that we would put toward the lower end of such a scale, that is, perceptual and motor habits, or better, motor-perceptual habits, since for Merleau-Ponty motor and perceptual habits intertwine.¹²⁸ When I use “habit” in what follows, I refer to motor-perceptual habits, in the first instance. But I think that it is crucial to Merleau-Ponty’s phenomenology of the body that there be a continuous

¹²⁵ See his remarks in the concluding pages of “The Spatiality of the Body Itself, and Motility.”

¹²⁶ See Katz 1989.

¹²⁷ Behind my conception of habit as a scale is Collingwood’s (1933) concept of a scale of forms; I conceive habit as a scale of forms.

¹²⁸ See *PdIP* 178, *PP* 153.

hierarchy of habits that are built upon one another and that downwardly and upwardly modify one another; in fact Russon has argued that the *Phenomenology* could be seen as a “gradual march through progressively more complex layers of experience,” and in Russon’s description of this march, habit is thematic.¹²⁹ Moreover, there are probably crucial relations between habit and Merleau-Ponty’s concept of “style,” but to even contemplate what this means would take us far afield. In any case, it is certainly crucial to this work that motor-perceptual habits be continuous with higher and lower habits, since it is in virtue of such openness that the body schema is modifiable by perceptual givens and by the general meaning of our being in the world. While I cannot say more here about this ‘ontology of habit’, this ontological background is crucial to what follows: I focus on motor-perceptual habits, but conceive them as habits of an embodied being in the world, which is to say that motor-perceptual habits are implicated in higher and lower habits.

In this section I will relate the body schema to habit by attending to the temporal experience of the body-world relation that is already implied in the lived body with its schema; I will show that this temporality of the body must be understood in terms of habit, and that the body schema and habit are thus fundamentally interrelated. Merleau-Ponty writes that “The acquisition of habit as a rearrangement and renewal of the body schema presents great difficulties to traditional philosophies, which are always inclined to conceive synthesis as intellectual synthesis.”¹³⁰ My main task here is to show what this claim means, and to show that the acquisition of habit as a rearrangement and renewal of

¹²⁹ Russon 1994, 294. See, e.g., the second last paragraph of “The Spatiality of the Body Itself, and Motility” for Merleau-Ponty’s description of a hierarchy of habits; cf. his discussion of the three orders in *SdC*.

¹³⁰ *PdP* 166, *PP* 142.

the schema amounts to a dialectical development of the body schema which, as we have seen, shapes motor-perceptual syntheses.

Habit as a Renewal of the Body Schema

I will now discuss habit by analysing our experience of the temporality of the body. I do not wish to give this elucidation in full, because a full discussion of the temporality of the body would divert me from my task.

Briefly, then, in the last section I showed that we must have a body schema, a pre-objective anticipatory relation to the world. It followed that the ontology of the body is that of a self-shaping expressive individual, and that perception is a process—a dialogue—in which the body schema communicates itself to the world. Perception, then, *takes time*. But perception would be impossible if the perceptual questions posed by the world did not solicit a body that always already anticipated a certain resolution of perceptual questions. The body, in virtue of the body schema, is always already working toward these resolutions. So perception is not a process in which moments of time are external to one another, that is, dispersed into an ordered series of points. Present perceptual questions already have their meaning in light of anticipated, future resolutions, and as we shall see, they have meaning in the present in virtue of the fact that they show up against past structures of the body schema, which in turn have a meaning for the future in virtue of habit. Within perceptual activity, moments of time are *internal* to one another, they are already interlinked.

As Merleau-Ponty puts it, the body is not *in* time, it is *of* time, it is ‘applied’ to time and ‘embraces’ it, it inhabits time.¹³¹ It is not as if the body is dropped into a stream of moments that flow by one by one, with the body indifferent to this stream. The meaning that the body has for us is implicitly temporal: our experience embodies the ‘I can’ that is fundamental to our being in the world, and thus the body presents itself as woven out of time. In the case of the phantom limb, anosognosia and Schneider, we have seen that disturbances of our relation to our past and to our future goals—disturbances of the way that our bodies are *of* time—can disturb our experience of ourselves as having motor-perceptual organs. Merleau-Ponty also shows that in our undisturbed motions the past is ‘dovetailed’ into the present and the present envelops the future, so that “each instant of [a bodily] movement embraces the whole span.”¹³² To just touch the surface of this important claim, the meaning of a motor-perceptual organ cannot be reduced to a determination in the present, since every motor-perceptual activity invokes an anticipatory structure.

In our experience, however, this temporality of the lived body is *just* implicit. We do not explicitly thematise the temporal structure of our body and its motor-perceptual organs, nor do we explicitly thematise the details of our body’s relations to things. We just experience our body and motor-perceptual organs as a given power for directing our intentionality to the world, and this experience is non-intellectual, implicit and pre-personal. I do not have to think about ‘using’ my body, I do not think that I am ‘using’ it,

¹³¹ Merleau-Ponty writes of space and time that “... je ne suis pas dans l’espace et dans le temps, je ne pense pas l’espace et le temps; je suis à l’espace et au temps, mon corps s’applique à eux et les embrasse.” (*PdIP* 164, *PP* 140) For the point that we inhabit time (and space) see *PdIP* 162, *PP* 139.

¹³² *PdIP* 164, *PP* 140.

I do not even separate this power that I 'use' from myself, or explicitly feel that I am responsible for making myself have this power. I just am 'my' body and I move toward the world:

If I want to take hold of an object, already at a point of space about which I have been quite unmindful, this power of grasping constituted by my hand moves upwards toward the thing. I move my legs not as things in space two and a half feet from my head, but as a power of locomotion which extends my motor intention downwards. (*PdIP* 171, *PP* 146)

But what does it mean for me to have such an experience of the powers of my body?

Let me once again use the power of grasping as an example. The very meaning of my implicit, non-intellectual assuredness about my grasp is that I behave toward the world in such a way as to show that there is no question for me about my power of grasping things. If I want to pick up my glass, I pick it up, if I knock the glass out of the cupboard when doing the dishes I find my hand having moved to grab the glass. My behaviour shows that at every moment my grasp is a power that *will* work for me. But before I engage in grasping I have no explicit confirmation that my grasp *will actually work*. More than that, if motor-perceptual activity takes time, there is no one moment within grasping in which my grasp can be fully confirmed—the fact that I can start to grip this thing does not assure me of my grip, for all of a sudden my hand could go numb, and this would be quite alarming. Even more important, no matter how many times my grasp is confirmed in motor-perceptual acts, *this still can never confirm my grasp itself*, since the very implicitness of my assuredness about my grasp means that it is *always a given* for me that my grasp *will already be* confirmed, even though no actual given could grant this confirmation.

There is a contradiction here. I experience my grasp as a power that I do not have to think about, that is already connected with things, that is always already confirmed as a

power. But no series of experiences could justify that confirmation. My implicit assuredness about my grasp cannot come from any series of moments in time or from any confirmations that the world can actually offer me. To seek such an assurance would be an intellectualist endeavour that tries to convert this implicit assuredness into some explicit thought (for example, into a version of the Husserlian ‘I can’), or an empiricist endeavour that tries to convert it into some present set of associations, or into some neural system, and so on. Both approaches are philosophically misguided, since we have no such assurance and we would be impaired in our ability to do things if we explicitly needed such an assurance;¹³³ more important, neither approach will be able to explain the meaningful yet empirical disturbances of the internality of time that we find in the ‘organic repression’ of the phantom limb and anosognosia, in the case of Schneider, and so on.

The implicit assuredness of my grasp, then, appears to be a sheer ‘affirmation’ implicit in my experience of the body that my grasp is *already* confirmed. My hands, as it were, exist for me as powers that have *already* ‘subdued’ the graspable under their grasp. But this is just to say that the world that is present to my grasp is present in virtue of a *habit*, that I have dealt with the world’s relation to my grasp *before* it is actually given to me. It is in virtue of the world confirming my grasp—which grasp is given to me in light of my habits—that my grasp is *already confirmed*, and that my powers for dealing with the world are implicitly assured. As Russon argues, in habitual life “it is *not* the case that

¹³³ Cf. Cole’s (1995) description of the amount of mental energy that I.W. and people with disabilities in general have to put into planning their activity and consciously seeking such assurances — this is what turns life into a “daily marathon” for I.W. Also cf. Goldstein’s (1995) discussion of the order of disintegration of performances in the organism, in chapter one of the *Organism*, in which he suggests that behaviour that explicitly seeks or deals with such assurance of survival appears only in cases of disturbance.

I *first* get the “thing” and *then* pass an interpretive judgment; rather, it is only *as* already interpreted that there is for me an other.”¹³⁴ When the world refuses our grasp in an unexpected way, we see that the world that is there for our grasp and that already confirms our grasp is a world given by habit, a world of things that are present as *expected to be subdued* by the grasp (or that can never be expected to be subdued by the grasp, in virtue of the grasp refusing them): the infant grabs the sunbeam; the child grabs the hot pot; I grab for the teetering wine bottle with a hand just put in a cast, and make an even worse mess of things; the patient tries to manipulate the world with the phantom limb; the anosognosic’s arm has no things to manipulate. But equally the world’s refusal of our grasp means that the world that is there for our grasp in the end is *not* the world expected by habit, but a world beyond habit.

Now we can see that habit phenomenally manifests the temporal structure of our body and its motor-perceptual organs, since habit is a sort of closing off in advance of the world. Having a habit means having a world in which the given *already* conforms to the intention that is embodied by my motor-perceptual organs. As Merleau-Ponty puts it:

We said earlier that it is the body which ‘understands’ [*comprend*] in the acquisition of habit. This way of putting it will appear absurd, if understanding is subsuming a sense-datum under an idea, and if the body is an object. But the phenomenon of habit is just what prompts us to revise our notion of ‘understand’ and our notion of the body. To understand is to experience the *harmony* between what we aim at and what is given, between the intention and the performance—and the body is our anchorage in a world. (*PdIP* 169, *PP* 144, emphasis mine)

When we have a habit, when we ‘understand’ in Merleau-Ponty’s new sense, we, in virtue of the implicit expectation that is habit, co-exist with the world in a certain way and experience a harmony between our goals and the given, so that each instant of our motor-perceptual activity *already* “embraces its whole span” by anticipating its goal.

¹³⁴ Russon 1994, 299, emphasis Russon’s.

When we have a habit our body is for us *already* a source of powers that unmindfully extend our intentions toward the world, and our bodily being in the world is pre-objective and anticipatory since the world is given as already harmonised with our goals.

My argument above, that our implicit assuredness about bodily powers cannot come from any series of moments in time or from any confirmations that the world can actually offer, reflects the fact that the lived body has a momentum of existence. Merleau-Ponty reveals this momentum of existence in his study of bodily motility and cases of ‘organic repression’ such as the phantom limb and anosognosia, and it is such phenomena that lead Merleau-Ponty to distinguish “as it were” two distinct layers in the body, that of habit body (*corps habituel*) and that of the body-at-this-moment (*corps actuel*), where it is clear that of the two it is habit body that is formative of our experience of the lived body.¹³⁵ In Schneider’s case certain sorts of harmonies can no longer be formed, namely, those in which the specified goal is not already meaningful for Schneider, but certain goals live on as meaningful for Schneider, ‘*merely out of habit*, making it possible for Schneider to carry out those everyday tasks that have an unstated implicit harmony, a purpose.¹³⁶

Here I have shown that it is in virtue of having habitual relations to the world that we experience our body as having an implicit, unquestioned, stable and continuous pre-objective anticipatory stance toward the world. The acquisition of a habit is in this sense a *renewal* of the body schema: habit sustains the anticipatory relation to the world that we find in the body schema.

¹³⁵ *PdIP* 97, PP 82.

Habit as a Rearrangement of the Body Schema

Now I must show how the acquisition of a habit can rearrange the body schema. In a sense, this has already been shown, for if the acquisition of a habit is sufficient to institute a renewable aspect of the body schema, then a change in habit is sufficient to rearrange the body schema. On the other hand, a renewal of the body schema just is the maintenance of a rearrangement of the body schema. We all know both that habits change and that they are hard to break, and that these two characteristics of habit go hand in hand. So my aim is not so much to show *that* habits change, but to discuss changes in habit in light of the harmony of our goals and the given. I will suggest that changes of habit are ways in which we try to hold onto or augment the harmony of goals and the given in the face of changes in our body, the world, or in our projects.

To changes of habit, then. I have a habit of grasping with my hand. This means that the parts of my hand are internally related so as to already work together as parts of an organ for grasping; my hand is ready to be solicited by the givens that are anticipated as harmonising with the goal, grasping, that will confirm my hand as grasping power. This process of solicitation and confirmation is implicit in my habit, and for me my hand is implicitly an organ for grasping insofar as its parts are subsumed under this habit. But suppose that I have sprained my thumb, broken a finger, or otherwise injured my hand. After such an injury, I move my hand toward the world according to a harmony that is no longer confirmed—my digits can no longer be subsumed under my old habit, and instead of gripping the glass between my hands and thumb, my thumb bumps into the glass and pushes it over. The important thing for me, though, is the harmony, the ability to pick up

¹³⁶ See the descriptions of Schneider at *PdIP* 120, *PP* 103.

the glass, that is affirmed by my old habit; and thus through some mixture of deliberate and spontaneous processes, the organisation of my digits and body eventually changes so that I form a new habit which harmonises my performance with my intentions, and I learn how to pick up the glass with a sprained thumb, at which point the steps involved in picking up the glass once again vanish into the activity of picking it up. In this case the parts of my hand and body are subsumed to a '*different*' habit, in the sense that they are organised in a new way within their gripping activity. At this point it must be noted that the sense in which this habit is *different* is ambiguous—it is a new way of having the old habit, but involves a different habitual behaviour. I will return to this point later.

Let us take up a related example. The child who is learning to grasp for the first time repeatedly tries to grasp and eventually does, and then builds up the habit of grasping. In the case of the injury, the possibilities of action that can harmonise the goal and the given are changed, and the body reorganises itself to re-establish the harmony. In the case of the child, the desired harmony is already there *before* the action that harmonises the goal and the given is achieved. So here too there is an ambiguity in the claim that the child has acquired a 'different' or 'new' habit: the harmony that is acquired in the habit would never have been acquired if it was not already affirmed in the first place by the child's 'unsuccessful' attempts at grasping. We can add that the harmony aimed at is experientially prior to the activity that achieves the harmony, since the baby does not deliberate on, or encounter, either the goal or the given outside of each other, but only aims at the meaning of their harmony. As Merleau-Ponty points out, "in their first attempts at grasping, children look, not at their hands, but at the object: the various parts of the body are known to us through their functional value only, and their co-ordination is

not learnt.”¹³⁷ In the case of the child learning to grasp for the first time, the implicit affirmation of a new goal for action in the child’s behaviour prior to grasping, leads to the spontaneous subsumption of the body under a new habit that organises parts of the body as an organ for grasping. Cognate to this case are instances in which we consciously set ourselves new tasks and, through a mixture of spontaneous and deliberate processes, acquire a new habit that reorganises our body toward a harmony of goal and given that accomplishes the new task—when I learned to write, my hand became an organ not only of grasping but of writing; should I succeed in reading braille, my hand will become an organ of reading.

In the first sort of example, of injuries, an old harmony of goal and given is disturbed when our possibilities for action change, and formation of a ‘different’ habit re-establishes the old harmony under a new habit. In the second sort of example, a new harmony is aimed at and a new habit is established. In both these cases a change on the ‘side of the perceiver,’ a change in goal or a change in the body’s possibility for action, leads to a change in habit. But changes in the world, in the given, are also fundamental in shaping new habits. When I learn to type on a different keyboard, use a new word processor, drive a new car (or in Merleau-Ponty’s example, when the organist learns to use a new organ), a change in the instruments that I use in dealing with the world leads me to modify my habits so that my goals can harmonise with the new givens, and this harmonisation is precisely manifest as a modification in *habit* because I do not deal with the objective structure of instruments, but with instruments as already integrated into my habits. Instruments vanish into my having a harmony of goal and given, just as the child’s

¹³⁷ *PdIP* 174, *PP* 149.

hand vanishes in reaching for things—instruments become extensions of my organs so far as they are transparent extensions of my behaviour that are subsumed under my habits. It is notable in these cases that the boundaries between the body and the world become ambiguous, and thus the division between the side of the perceiver and the side of the world breaks down. But this shows that the ontology of the lived body is that of a self-shaping being in the world, in which the perceiver and the world interpermeate one another.

Above we have seen cases in which changes in the possibilities that are given through the body, changes in the possibilities that are given by the world and changes in our projects, enter into complicated relations that can lead to spontaneous changes in the harmony between our goals and the given, or to spontaneous changes in the way that we achieve these harmonies. Habit in general is a form of the body's fundamental power to "endow the instantaneous expressions of spontaneity with 'a little renewable action and independent existence',"¹³⁸ and when we establish or re-establish ways of achieving these changing harmonies, we can say that our habits change. When I acquire a new habit, my body implicitly affirms a new harmony between my goals and what is given, so there are new things for me and new relations that I can anticipate before I actually encounter things. This cannot be reduced to any association of events, since habit is precisely anticipatory. But neither can the meaning of this harmony be reduced to an intellectual act, since it is given by an anticipatoriness of the whole body. "The acquisition of a habit is indeed the grasping of a significance, but it is the motor grasping of a motor

¹³⁸ *PdIP* 171, *PP* 146. Merleau-Ponty is quoting from Valéry, *Introduction à la Méthode de Léonard de Vinci, Variété*, p 177.

significance.’¹³⁹ The acquisition of a habit, then, means a reorganisation of the lived body and its pre-objective anticipatory relation to the world, it is a rearrangement of the body schema and consequently it is the formation of a new synthesis of perception. *The body schema is labile and perceptual synthesis is labile*—but the precise sense of this lability needs some clarification since the difference between the renewal and rearrangement of the body schema is ambiguous.

Habit, the Dialectical Development of the Body Schema, and the Lability of Perception

Above I showed how the renewal of the body schema can also be a rearrangement of the body schema in light of a harmony that we want to hold onto. I now want to show how the renewal and reorganisation of the body schema in habit can be understood as a *dialectical development* of the body schema, and that such a development should be understood as the formation of a ‘new’ motor-perceptual organ, or instrument, of the lived body. This discussion will show how spatial perception, insofar as it is shaped by a body schema, could be labile and be shaped by our response to our surround. The discussion will also serve as preparation for the discussion of instruments of the body.

The concept of development and of development as dialectical is an important one in our philosophical tradition, most notably in Plato’s conception of philosophy as a dialectic, Aristotle’s analysis of growth, Hegel’s analysis of spirit and its development; and it is also to be found in Collingwood’s discussion of philosophical method, and in analyses of changes in concepts. What I wish to bring out in my discussion of Merleau-Ponty, and what I find remarkable and important in his philosophy, is his conception of

¹³⁹ *PdIP* 167, *PP* 143.

perceptual development as a phenomenon of the lived body. Against intellectualist conceptions in which learning to perceive is the acquisition of a new intellectual category, or empirical and nominalist conceptions in which learning to perceive is the acquisition of a new association or the acquisition of a new 'linguistic practice,' Merleau-Ponty argues that perceptual development is an existential phenomenon in which our embodied being in the world changes its anticipatory relation to the world, thus changing the way in which we deploy our lived bodies toward the world, thus forming new motor-perceptual organs of the lived body. Perceptual development is, in other words, to be conceived as a development of the body schema, through the acquisition of a habit. I should note, though, that I do not see Merleau-Ponty's account as being antagonistic to Collingwood, Plato, Aristotle and Hegel, but rather as complementing their accounts.

In a sense, the developing body schema appears as an *a priori* of embodiment that changes over time: the body schema is a condition that must precede all perception, since perception is anticipatory, but the body schema as renewed and rearranged by habit—as habitual—can be conditioned by what we perceive. This sense of the *a priori* seems peculiar, but it arises quite naturally in Merleau-Ponty's discussion of the problem of how we learn to perceive in new ways. In his analysis of attention in the third chapter of the introduction to the *Phenomenology of Perception*, "'Attention' and 'Judgement'," Merleau-Ponty notes the general logical problem that perceptual learning poses for intellectualism and empiricism. With respect to learning and development, intellectualism and empiricism are cognate to the two poles of the seeker's paradox discussed at *Meno* 80d. In Plato's *Meno*, the paradox is articulated with respect to knowledge in general; in

“‘Attention’ and ‘Judgement’” Merleau-Ponty articulates the paradox with respect to perception:¹⁴⁰

Where empiricism was deficient was in any internal connection between the object and the act which triggers it off. What intellectualism lacks is contingency in the occasions of thought. In the first case consciousness is too poor, in the second too rich for any phenomenon to be able to *solicit* it. Empiricism cannot see that we need to know what we are looking for, otherwise we would not be looking for it, and fails to see that we need to be ignorant of what we are looking for, or equally again we should not be searching. They are in agreement in that neither can grasp consciousness *in the act of learning*... (*PdIP* 36, *PP* 28, emphasis Merleau-Ponty's)

We have already seen how Berkeley's and Descartes's accounts of depth perception fall to this general criticism. In Berkeley's account of depth perception, depth just is an internal ordering of the sensory field, determined by the alien natural language of vision, and consciousness can only 'read' this language mechanically, not reformulate or reinterpret it, so the language remains fixed. In Descartes's account the mind decodes an idea of depth in virtue of a natural geometry that makes the world already match the mind, so no object can disturb or develop this pre-set geometry. As Merleau-Ponty points out, it is difficult to explain learning in such accounts.

Shortly after his remark about the seeker's paradox, Merleau-Ponty illustrates a specific instance of a perceptual version of the paradox using the example of the development of colour perception in infants. In the first nine months infants "distinguish only globally the coloured from the colourless; thereafter coloured areas form in 'warm' and 'cold' shades, and finally the detailed colours are arrived at." Merleau-Ponty suggests how intellectualist and empiricist explanations fail to account for the development of

¹⁴⁰ For a cognate discussion of intellectualism and empiricism as poles of the *Meno* paradox, this time articulated with respect to the *cogito* and the transcendental and empirical ego, cf. the explicit mention of the *Meno* at *PdIP* 425, *PP* 371. The seeker's paradox and the correlate demand for an account of the fact of learning are a constant theme in *PdIP*, especially in chapter three of the introduction, "‘Attention’ and ‘Judgement’." See Dillon 1988 for a discussion that approaches Merleau-Ponty through a discussion of the seeker's paradox.

colour perception and fall prey to the logic of the seeker's paradox. His remarkable solution to this paradox is that "The first perception of colours properly speaking, then, is a change of the structure of consciousness, the establishment of a new dimension of experience, the unfurling [*déploiement*] of an *a priori*."¹⁴¹

I want to show that "the unfurling of an *a priori*" can be understood as the acquisition of a 'new' habit that rearranges the body schema, and that for Merleau-Ponty this rearrangement of the body schema is not a change in consciousness, but amounts to the formation of a new motor-perceptual organ of the lived body. Merleau-Ponty's own argument is articulated with respect to the problem of learning new colours, but I do not wish to consider Merleau-Ponty's theory of colour perception here in detail, which would be necessary to understand his argument; yet I think it is important to pull together the thread of argument that Merleau-Ponty develops with respect to colour; so what I will do is report on Merleau-Ponty's argument, and support it by showing how it would work in the case of binocular vision.

In order to understand how the lived body forms new organs of perception, we must first recall that on the above analysis of habits of grasping, a motor-perceptual organ of grasping should be understood as a set of parts of the lived body subsumed under a habit. Insofar as I have a habit that implicitly affirms that the grasping power of my hand is already confirmed by the world, before I grasp anything, the pre-objective anticipatoriness embodied by my hand is already present for me in my lived body—this is manifest, for example, in the pre-shaping of my grip posture to the world (which grip posture is absent

¹⁴¹ *PdIP* 38, PP 29-30.

in I.W. and G.L. when they cannot see their hands, but is present in infants from the start¹⁴²). The unity of my hand as grasping organ is given in a habit.

But recall also that the perceptual activity in which this pre-objective anticipatoriness is realised, is an activity in which the body schema communicates itself to the world, and this process gives correlative perceptual syntheses of the body and of the world. The pre-objective anticipatoriness of my grasp is solicited by the marble in my activity of grasping, and grasping the marble confirms and synthesises both the marble and my grasp. The body schema that is renewed and rearranged by habit is realised in perceptual acts in which the world reflects and confirms the body schema. The world is integral to the lived body's sense of itself, since the world's confirmation of the lived body is integral to the lived body. But so far as the body schema is renewed and rearranged by habit, and so far as the habit works, the need for making this confirmation explicit is suspended—the world is integrated into the body in habit. To have a habit that subsumes the skin, muscle, and bone of my hand within a power of grasping, is to suspend the need that this power be confirmed at every moment; and to suffer an anosognosia of the hand is in part to deny that anything in the actual world could ever confirm the existing muscle and bone of the hand as a power of grasping.

While a habit suspends the need for the world's explicit confirmation of a bodily power, such a suspension precisely shows what is at stake in such a bodily power. To have a habit of grasping is to pre-objectively and unreflectively suspend the issue of whether my hand can grasp, it is to have this power be an unthematized background of my

¹⁴² On the former see Cole and Paillard, 253. On the latter see Butterworth 1995; Butterworth and Hopkins 1998; Meltzoff and Moore 1977; Thelen and Smith 1994; and von Hofsten 1986.

everyday relation to the world. But this means that my pre-objective anticipatory relation to the world precisely depends on the harmony between goal and given that *would* be realised and confirmed by the actual usage of my hand. I would be shocked, and confronted by the skin, bone and muscle of my hand that normally vanishes into my power of grasping, if my hand suddenly did not work when I reached for something.¹⁴³ To suspend the need for the world's explicit confirmation of a bodily power is thus to affirm that a certain issue about the harmony of the world does not explicitly matter at this moment, and it is thus to affirm that the world is such as to confirm this harmony relative to my body. Such a suspension is therefore also a suspension of the actual world to some degree or other—it puts the world 'on hold' by presuming that the world is in a certain way, and thus holds up around us the world that is presumed in our habits. But this means that the issue of whether our lived body can actualise harmonies between the goal and the given is not *dead*, it is just *suspended*, and because our anticipatory attitude to the world cannot actually confirm every such harmony, such an issue can always become *live* when we are confronted by a thing that disrupts our attempt to realise a harmony between the goal and the given.

Recall that the ontology of the lived body is such that the lived body is a self-shaping expressive individual, and that the self-shaping of the lived body is specified by the body schema. In perceiving the world, we synthesise both the body and the world through their interpermeation, so perception in effect establishes the distinction between the body and world; we have to look to the perceiving body if we are to draw the line between the lived body and the world. Rearrangements of the body schema can thus

¹⁴³ Cf. Leder 1990 on the hiddenness of the body and its appearance in disease.

effect changes in the distinction between the body and the world. Glasses that are not part of the biological body, become part of the lived body of the seer when they are integrated into habits. In general, instruments, which in one sense seem to be part of the world, can become integrated into our lived bodies if we come to depend on them in our perceptual habits. We even might want to say that the lived body is that part of the world, that instrument, even, that we cannot do without, and in the most primordial sense the body with its original body schema is that without which there could never be any further confirmations, suspended or otherwise, of the lived body, or any tools, since without the body there would be no lived body, and without the body schema there would never be any meaningful distinction between the lived body and the world. But parts of the world that we can sometimes and in some ways do without, sometimes become crucial to us, and then they take on a new role within the lived body.¹⁴⁴ One extraordinary example of this is given in the case of I.W., who has lost sensation of his own body below the neck; he has a severely constrained body schema and must deal with the world through explicit movement of his body, which requires a huge mental effort; yet I.W. finds driving in his car quite relaxing—the fact that control of his car works mostly through vision assists him to a high degree in “incorporating the car into his system of motor control,” and thus for I.W. a body schema that can anticipate easy motion through the environment is *only* achieved when he incorporates the car into his ‘natural’ body schema through driving habits.¹⁴⁵

¹⁴⁴ See Kujundcic and Buschert 1996 for a discussion of Sartre and Merleau-Ponty on the body and instruments.

¹⁴⁵ See Gallagher and Cole 1995, 386; also see Cole 1995.

Merleau-Ponty deals with a case of the integration of an instrument into the body in the “The Spatiality of the Body Itself, and Motility.” He writes that “The blind man’s stick has ceased to be an object for him, and is no longer perceived for itself; its point has become an area of sensitivity, extending the scope and active radius of touch, and providing a parallel to sight.”¹⁴⁶ Later, in “The Synthesis of the Body Itself,” Merleau-Ponty writes:

Learning to find one’s way among things with a stick, which we gave a little earlier as an example of motor habit, is equally an example of perceptual habit.... But [the] habit does not *consist* in interpreting the pressures of the stick on the hand as indications of certain positions of the stick, and these as signs of an external object, since it *relieves us of the necessity* of doing so. The pressure on the hand and the stick are no longer given; the stick is no longer an object perceived by the blind man, but an instrument *with which he perceives*. It is an appendix of the body [*appendice du corps*], an extension of the *bodily synthesis*. (*PdIP* 177-178, *PP* 152, last emphasis mine)

The stick becomes part of the habitual perceptual process in which the body schema communicates itself to the world, and is thus integral to the perceptual confirmation of the body. The perceptual co-synthesis of feeling-with-the-stick does not involve three terms, man, stick and thing, but two: the ‘man-with-stick’ and the ‘thing-that-can-be-felt-with-the-stick’. The stick ‘migrates’ from being part of the world, to being part of the world that serves as a medium for our relation to the world. But once the blind man depends on the stick for perceiving, the stick is no longer experienced as an explicit medium of relation to the world. As Merleau-Ponty points out “the length of the stick does not enter expressly as a middle term,”¹⁴⁷ and neither do any of the stick’s other determinations, any more than the index of refraction of the visible medium enters as an explicit middle term of vision—the refractivity of the medium is already internal to the very organic structure that makes the eye an eye for a human being and it is already

¹⁴⁶ *PdIP* 167, *PP* 143.

internal to our habits; for example, we cannot see properly underwater without goggles that surround our eyes with air, and even with goggles, things underwater look bigger and closer than normal.¹⁴⁸ Ultimately, then, the stick becomes an ‘appendix of the body,’ and it is only from the point of view of self-consciousness that we separate the various media through which we perceive, from their invisible role in perceptual behaviour.¹⁴⁹ So the stick becomes integrated into the bodily synthesis so long as we cannot do without it for feeling our way through the world, and we can suspend the need for explicit confirmation of this power of probing so long as we have already turned part of the world against itself in acquiring the habit of using a stick to feel.

This shows how habit, as Merleau-Ponty writes in the “The Spatiality of the Body Itself, and Motility,” “expresses our power of dilating our being in the world, or changing our existence by annexing new instruments to ourselves.”¹⁵⁰

The above shows that the motor appropriation of instruments is also a perceptual appropriation of instruments.¹⁵¹ When I shift the division between myself and the world

¹⁴⁷ *PdIP* 167, *PP* 143.

¹⁴⁸ See Kinney 1985.

¹⁴⁹ Cf. Merleau-Ponty’s comment about primate tool use in *SdC* 189-90, *SB* 175; Merleau-Ponty claims that the data show that when a primate uses a tree branch as a tool the tree branch vanishes as such, but for human beings tools always have a dual nature—the branch is an extension of a body, but also a branch that has properties of its own outside of those that make it useful. Whether Merleau-Ponty’s claim is true of primates would have to be taken up in light of current results.

¹⁵⁰ *PdIP* 168, *PP* 143.

It is well worth noting that Merleau-Ponty’s analysis of the integration of the stick into the body stands in opposition to the analysis of the blind man’s stick in the *Optics*, where Descartes writes that the differences in the bodies sensed with the stick are nothing more “than the various ways of moving the stick or of resisting its movements,” and that the blind man also feels bodies “through the action of his hand when they [the bodies] do nothing but resist the stick.” (AT VI: 85-86) Merleau-Ponty criticises Descartes for reducing vision to this sort of analysis so that it ends up being an interpretation of signs made in the body; Merleau-Ponty, on the other hand, raises the blind man’s stick into the transparent integration with the body that is natural to organs of sight, even if this integration loses its transparency when we reflect on it. Thus the hand-stick system becomes an organ for looking, in the way that our eyes are organs for looking.

through my internal relation to the world, turning the world back on itself so that I meet the world through a medium that extends my natural body by incorporating instruments, I change the perceptual possibilities available to me: my glasses as part of me allow me to see a world that my eyes cannot. The habitual integration of glasses into my seeing means that the world that I suspend in my habit is the sharp edged world that is given me only through glasses. My glasses thus become integral to the bodily synthesis through which I am in the world. Habit as a re-organisation of the body that integrates fresh instruments into the body thus amounts *to the literal formation of motor-perceptual organs*.

But we should not forget that the body we are born with is for us our primordial ‘instrument,’ the ‘instrument’ without which there would be no other instruments. The lived body is itself organised by habit and can be re-organised by changes of habit. As Merleau-Ponty writes early in the *Phenomenology of Perception*, when he considers the metaphysical necessity of the body, the permanence of our bodies is not:

... to be compared to the *de facto* permanence of certain objects, or the organ compared to a tool which is always available. It shows conversely that those actions in which I habitually engage incorporate their instruments into themselves and make them play a part in the original structure of the body itself. As for the latter, it is my primordial habit, the one which conditions all the others, and by means of which they are mutually comprehensible. (*PdIP* 107, *PP* 91)

The lived body with its schema is a primordial habit. So the acquisition of a habit that rearranges the body schema can amount to a re-organisation of the motor-perceptual structure of the primordial habit that is the lived body; it can amount to the acquisition of a new habit of the natural body, and the formation of a new perceptual instrument of the natural body. Just as we can acquire a new perceptual habit through integrating a

¹⁵¹ Cf. Merleau-Ponty’s comment that “The analysis of motor habit as an extension of existence leads on, then, to an analysis of perceptual habits as the coming into possession of a world. Conversely, every perceptual habit is still a motor habit and here equally the process of grasping a meaning is performed by the body.” (*PdIP* 178, *PP* 153)

technical instrument into the bodily synthesis, we can rework the way the given lived body synthesises itself and the world in perception. This is what has happened in the phantom limb and anosognosia, or when we compensate for injuries or, for example, when we learn to read braille, or sign with our hands, or engage in the looking that is required if we are to paint or draw.

Merleau-Ponty himself conceives the development of colour perception as the formation of a new organ of perception, through the acquisition of a habit that rearranges the body schema, where this process is motivated by the interrelation of the body and the world. As I noted above, I do not want to get into the details of Merleau-Ponty's argument, but in order to understand his point it is crucial to know that for Merleau-Ponty colour vision is a *motor*-perceptual activity. Seeing one thing with two eyes requires that things guide our look so that we open up places in which can see unified things, and in Merleau-Ponty's theory of colour perception and vision, it is similarly the case that lit situations must solicit certain *motor*-perceptual explorations from our body if we are to see coloured things—the seeing body is an intertwining of vision and movement.¹⁵² This point is crucial because it means that colour vision is not a passive receptivity, but a prospective motor-perceptual activity that couples us to a lived world containing coloured things; thus changes in the body schema could reshape this coupling and thus change colour vision.¹⁵³ After all, the painter can learn to see the coloured world in a new way, and we would not want to say that this is because the pigments in her retina change; she

¹⁵² For Merleau-Ponty's discussion of colour vision in *PdIP*, see "Sense Experience." See *OE* 16, *EM* 162 on movement and vision. For an analysis of Merleau-Ponty on colour vision, that includes discussions of motility and the logic of lit situations, see Mallin 1979, esp. chap. 3.

sees colour in a new way in virtue of the fact that she learns to look in a new way, and this new way of looking is equally a change in the ontology of the coloured things that she looks at.

In explaining how the child learns to see the colours blue and red, and thus learns about colour in general, I think that Merleau-Ponty is trying to do the following. He wants to avoid the empiricist reduction of seen colours to disjoint sensations, since this would mean that the child, before learning to distinguish the colours, must have sensations that are somehow determinate on their own without being either blue or red—after all, the child has a ‘missing shade’ of blue right before her eyes, but at first fails to see it as blue. On the other hand, Merleau-Ponty does not want to lapse into the errors of intellectualism by making colour into a purely intellectual category, for then there would be no reason why the child could not use the category in the first place. Merleau-Ponty’s solution is that the acquisition of the ability to see colour, and the consequent acquisition of colour as a ‘category,’ must be the acquisition of a motor-perceptual habit that allows the child to distinguish red from blue (a habit in which, we could say, the lived body sets up a new figure-ground relation for seeing colour). But the acquisition of the habit must be rooted in the given “‘blue’ and ‘red’ panels presented to” the child, which manifest “the particular kind of vibration and impression on the eye known as blue and red.”¹⁵⁴ The presence of the ‘blue’ and ‘red’ panels, which already ‘embody’ the colour category *for* the child’s body *before* the category is explicitly perceived by the child, can solicit the child to *look* in a new way. When the child catches on to the spontaneous look that

¹⁵³ See Thompson 1995 and Thompson, Palacios and Varela 1992 for arguments that I think supports the claim that colour vision depends on a prospective coupling to a lived world of coloured things.

reveals red and blue, the look that is solicited by the panel, and invests this look with “a little renewable action and independent existence,”¹⁵⁵ the child forms a habit that incorporates the look that will reveal colour into the child’s lived body. The ability to *see* colour then becomes an explicit power belonging to the child. Prior to catching onto the habit, the panels can solicit the child to look. But the child truly *sees* the different colours only when the child *will* forever more see them as different, that is, when the look that sees colour is deployed by the child toward a world that the child anticipates as coloured. (Here we should note that there is no ‘first moment’ of seeing colour; habit formation always has a retrospective temporal structure.)

In Merleau-Ponty’s description, the formation of the habit in virtue of which the child learns to see blue and red as colours shows that:

In the gaze we have at our disposal a *natural instrument* analogous to the blind man’s stick. The gaze gets more or less from things according to the way in which it *questions* them, ranges over or dwells on them. *To learn to see colours is to acquire a certain style of seeing, a new use of the body itself, it is to enrich and reorganise the body schema.* (PdlP 177-78, PP 153, emphases mine)

The body is a natural instrument, a primordial habit, that is to our learning to perceive colour as the stick is to the blind man’s learning to perceive the world through the stick. “...[T]hose actions in which I habitually engage incorporate their instruments into themselves and make them play a part in the original structure of the body itself. As for the latter, it is my primordial habit...”¹⁵⁶ As I have argued above, by deploying our body toward the world in a new way we acquire a new style of perceiving, a new perceptual

¹⁵⁴ See PdlP 178-79, PP 153.

¹⁵⁵ PdlP 171, PP 146.

¹⁵⁶ PdlP 107, PP 91.

habit; and thus we enrich and reorganise the body schema, incorporating a new instrument, a new organ, into our primordial habit.

Now I do not wish to claim here that I have done justice to Merleau-Ponty's argument so far as it concerns colour. But I do think that the above captures important points about Merleau-Ponty's account of perceptual learning. Perceptual learning occurs in a situation in which we are presented with a thing that surpasses the current articulations of our phenomenal field, yet in which the 'surpassingness' of this thing is not imperceptible, but shows up as a vagueness or strangeness of the thing. That is, our phenomenal field—which is shaped by the body schema, the schema of motor-perceptual habits through which we prospectively explore the world—is open to disturbances and questions from the 'actual' world 'behind' the world that is suspended in habit. The child's 'uncoloured' world does not preclude the appearance of some sort of variance in the blue and red panels, and this variance can motivate the child to look at the world in a new way; this way of looking can then be incorporated into the child's habitual look, so that the world suspended in the child's habit becomes a coloured world. Learning to perceive something new depends on a perceptual encounter in which new habits are formed, and this amounts to the formation of a new motor-perceptual organ, that is, a new way of uniting parts of the body toward the world anticipated in perception. Learning to perceive something new is not the acquisition of a new conceptual category or the formation of a new associative process.¹⁵⁷

¹⁵⁷ The remarkable character of Merleau-Ponty's account becomes evident if it is contrasted with the sort of account that might be derived from empiricism (cf. Hume's account of the missing shade of blue in the *Enquiry*) or from a linguistically focused philosophy (cf. Wittgenstein's discussion of colours in the beginning of the *Investigations*).

But this account means that all perceptual learning is grounded in possibilities that are already implicit in our body schema. These implicit possibilities are only activated in given situations in which things surpass our perception and we are ready to perceive them as surpassing our perception (these situational, 'existential' qualifications are crucial if we are to avoid a new version of intellectualism). In other words, as I have argued in the discussion of habit and the suspension of the world, implicit in the lived body is an anticipated harmony with the world; in anticipating such a harmony we suspend the world around us; but we are nonetheless open to the actual world, and thus we can find that certain harmonies that we aim at are lacking in some way with respect to what is actually given; this motivates a rearrangement of the body schema, the primordial habit through which we suspend the world. I think that Merleau-Ponty is pointing to such a process when he remarks of learning to see colour, and learning to perceive generally, that:

Sometimes a new knot of meanings is formed: our old movements are integrated into a new motor entity, our natural powers suddenly come together in a richer meaning, which hitherto has been merely foreshadowed in our perceptual or practical field, and which announced itself in our experience as no more than a certain lack, and which by its coming suddenly reorganises the elements of our equilibrium and fulfils our blind expectations. (*PdIP* 179, *PP* 153)

In sum: our phenomenal field can foreshadow richer meanings, which can appear as lacks when we are actually confronted by things that manifest these richer meanings; in this case, we can reorganise our phenomenal field by acquiring a habit that "enriches and reorganises the body schema," and this amounts to the formation of a new motor-perceptual organ.

This description of the development of the body schema means that the development is *dialectical*. The rearrangement of the body schema is motivated by what can already be perceived through the 'old' body schema. The 'new' body schema is

already implied in the 'old.' But in order to develop, the perceiver must encounter some surpassing thing—an other—that can draw out this implication in the body schema. The development of the body schema is thus dialectical, in both the sense of Plato and Hegel. To give the Platonic sense, when the lived body encounters a vague or ambiguous perceptual interlocutor, the habitual behaviour of the lived body is confronted by a thing that seems new but could not really be new, since the lived body could only encounter things that it is already capable of perceiving; so the new thing prompts a 'recollection,' an unfolding, of the body schema *qua* soul of the body-world dialogue, the thing demands that an implicit and hidden power of world-articulation be made explicit. The development of perception is thus cognate to the development of knowledge in a dialectical dialogue. Similarly, the development of perception is also akin to Hegelian dialectic, if by Hegelian dialectic we mean a process in which the posits of self-consciousness are enriched when they are contradicted by the phenomena of which they are posited, and thus drive certainty-seeking consciousness to transform these concepts.

Such a dialectical development would require that we always already have a body schema. If there is to be 'recollection,' then there must be an 'immortal soul.' But this just means that the body schema is the shaping of the lived body as primordial habit, or as I will put it, that the body schema is the primordial habit of the lived body. Here there is an ambiguity in the concept of habit: insofar as habit is inseparably embodied in the being of which it is a habit,¹⁵⁸ the lived body is our primordial habit; but insofar as habit is a power of our bodies and specific habits are dispositions of our bodies—insofar as we can *have* habits—the body schema is the primordial habit of the body, the habit in virtue of

which our body is for us our lived body, a medium of being in the world. The body schema as primordial habit that gives us a pre-objective relation to the world precedes all other habits and must be given at birth (it even precedes our birth in the sense that structures of the human world outside us can be integral to our body schema, and anticipate our birth).¹⁵⁹ This would lead into a discussion of the natural body of perception as pre-personal and primordial, an important theme in the *Phenomenology of Perception*, but I do not want to go into this here. I only wish to point out that because it is a dialectical development, because it is a principle of the lived body that *founds* its own rearrangement, the body schema has a peculiar status—it precedes all perception but is labile in perceptual encounters with the world; it is an ‘unfolding *a priori*.’ But it is precisely this lability, existentiality, contingency and facticity of the ‘*a priori*’ that Merleau-Ponty everywhere tries to capture in the word “primordial.”

Let me try to illustrate and justify the point about perceptual development (which was made by reporting on Merleau-Ponty’s discussion of colour perception) by referring to the plasticity of binocular vision, which will bring us back to the topic of spatial perception. Merleau-Ponty writes that “On passing from double to normal vision, I am not simply aware of seeing with my two eyes *the same* object, I am aware of progressing to the object *itself* and finally enjoying its carnal presence.”¹⁶⁰ It is this carnal presence of the thing that we anticipate in the harmony or equilibrium between ourselves and the

¹⁵⁸ Cf. Casey’s (1984) discussion of habit.

¹⁵⁹ My interpretation of Merleau-Ponty on the body schema runs contra to that given by Gallagher and Meltzoff (1996), who claim that for Merleau-Ponty the body schema is not innate, since it is developmental; I claim that it is innate and developmental.

¹⁶⁰ *PdIP* 269, *PP* 233.

world. If we were to don glasses that optically left-right reverse the visual fields of each eye, the unified vision through which we are given the carnal presence of the thing is disrupted in a way that is entirely new (the disruption is quite unlike the double vision of crossed eyes).¹⁶¹ But the disrupted images—*qua* giving us motor-perceptual access to a world of visible things, not in themselves—foreshadow a unified vision and appear as ghostly, as lacking with respect to the anticipated harmony between ourselves and the world. Thus the disrupted images contain the seed of their resolution; precisely in virtue of their pointing to a definite lack in the world given us, they can guide our explorations of the world toward the sort of look that will resolve this lack. As we catch on to this look and it becomes habitual, vision of a world of unified things in depth becomes better and better, and a new motor-perceptual organ of seeing is specified in the body schema, namely the motor-perceptual organ: body-eyes-(left-right reversing glasses). The new motor-perceptual organ through which we see the world, which is a ‘synthetic’ organ, is as much an organ of perception as blind man-with-stick, or person-eyes-(normal glasses), or person-(eyes with strabismus) (strabismus is a drift of the eye away from the ‘fixation point’).

The crucial point with respect to giving an account of the lability of spatial perception is that in each of these cases the motor-perceptual organ of sight is shaped within a habitual activity in which parts of the body and the world are unified together toward things in the world, such that the unity of the organ and the unity of things reflect one another. And the shaping of this habitual activity is given in the body schema, a primordial habit that can develop in response to changes in the body or the situation; the

¹⁶¹ See Ichikawa and Egusa 1993 for a report on this experiment.

development of the body schema is motivated by an overall harmony between the lived body and the world, which harmony is aimed at in the body schema as a whole, in the lived body as original habit. Thus extreme cases of change—learning to see something for the first time, donning distorting glasses, and so on—point to a general, situationally motivated lability of the motor-perceptual organs. Seeing through glasses, binoculars or movie cameras requires a different sort of looking than seeing without them; seeing when driving, flying, scuba diving, using a microscope or reading requires a different kind of looking than walking down the street. In each case the task aimed at, which task is a situationally specified instance of the overall harmony between our lived body and the world, brings into play different habits of looking, either by calling up old habits or forcing us to learn new ones. As Merleau-Ponty notes, the dynamism of the body schema means that “my body appears to me as an attitude directed towards a certain existing or possible task.”¹⁶²

In general then, Merleau-Ponty’s theory of perception, in which perception is shaped by the body schema, a primordial habit, will in principle let us explain how perception is labile, while still letting us explain how perception is not an empirical or intellectual process, but a habitual motor-intentional process that already anticipates meanings in situations. It will also let us explain breakdowns of perception: when we are tired, under stress, ill, anguished, depressed, disconnected from our world involvements, and so on, our power of unifying our lived body under habits that shape our lived body as possessing organs of perception may be disrupted, and this may change our perception of the world. In other words, the habits of the body schema are continuous with the full

¹⁶² *PdIP* 116, *PP* 100.

range of our being in the world, and perception and perception of depth are therefore shaped by the meaning of our being in the world.

*The Body Schema and Motor-Perceptual Organs:
'Life-Organs' and 'World-Instruments'*

The above shows that motor-perceptual organs are formed, as we could put it, 'out of habit,' rather than out of the physiological body in-itself. Further, syntheses achieved through motor-perceptual organs *qua* habits unify the body and the world in a reflective relation—every perceptual synthesis is at once a synthesis of things and the body. This means that motor-perceptual organs are a blending of the body and the world. Parts of the world can become integral to the lived body—the body schema not only schematises the behaviour of the body, but the living movements of the body-world system.

For example, the gravity of the earth and the surface of the ground around us are integral to the walking motions of our legs.¹⁶³ When it is icy out, different habits of motion get us where we are going, and when we cover a well worn route, the specificities belonging to that route on its own vanish into habits of getting from here to there.¹⁶⁴ The unseen places behind us are present as an integral part of our motion and perceiving. The refractivity of air is integral to the seeing of the eye—sight is blurred underwater without goggles. The reflectivity of surfaces, density of air and other media are integral to our hearing—the hush after a snowfall is palpable, our voices sound peculiar on tape

¹⁶³ On the relation between gravity and walking motions, see Thelen and Smith 1994; Thelen 1995; Thelen and Fisher 1982; Thelen 1983 and Thelen 1984. Thelen's basic argument is that the weight of the leg is crucial to shaping the stepping pattern; her work also suggests that the forward fall of the body which puts ground behind us is crucial to establishing the rhythmic patterns of bipedal behaviour. This suggests that walking is not a behaviour shaped by the body on its own, but belongs to the body-ground-gravity system. I will discuss Thelen's results in the conclusion.

recordings, and our conversations in cafés would sound very strange if all of a sudden the echoes and clatter that are a background disappeared. Our looking is guided by habits that invest familiar places and sorts of places with guiding roles in our look. A different sort of looking is required for highway driving, or walking down the street, or sailing on the water. Places around us and their specificities in relation to our bodies become absorbed into our habitual motor-perceptual activities, and if such places are modified or do not actually correspond to our habitual anticipation of them, then our activities can go awry. And as Casey argues, not only do we belong to places, but “places belong to bodies”: in “body memory” (which Casey elsewhere discusses in relation to habit), places become internal to our bodies, “they ingress into bodies in enduring and significant ways.”¹⁶⁵

In order to capture this integration of place into the habits of our embodiment, and to set up a problematic distinction between organs belonging to the lived body and organs that belong to the lived body through its place, I introduce the term “world-instrument” and the contrasting term “life-organ” to differentiate different sorts of motor-perceptual organs of the lived body. We have seen that the lived body is a self-shaping expressive being in the world that marks distinctions between self and the world, and that this distinction between self and world is not rigidly confined to a distinction between the organic body and outside material; we have also seen that the lived body extends itself through instruments and its relation to places. We could say that certain powers that belong to the lived body are fleshed out through various incorporations of matter into the lived body. For example, grasping can be fleshed out through biological organs of the

¹⁶⁴ See Russon 1994 for a discussion of habits of driving a route.

lived body (e.g., the hand), through natural organs plus instruments (e.g., the hand plus a stick), or even a non-existent hand (the phantom limb). The grasping organ of the lived body is thus not to be identified with a biological organ of the lived body, so I refer to the organ as it belongs to the schema of the lived body as a “life-organ.” (I intend “life-organ” to be a construction cognate in formation to Husserl’s “*Lebenswelt*” and Merleau-Ponty’s “*corps vivant/corps vécu*” and to echo the “*Leib/Körper*” distinction.) But as noted above, other parts of the world can become integral to our life-organs: the ground is crucial to our legs, and the air to our eyes. I call such parts of the world “world-instruments.” The distinction between life-organs and world-instruments is roughly as follows: life-organs are parts of the world, organic or inorganic, that are subsumed into motor-perceptual organs of the body, but that belong within bodily space, that is, within the place of the body; world-instruments are parts of the world that are habitually subsumed as integral to our motor-perceptual habits, but world-instruments have their own place outside of bodily space—we leave them behind in our motor-perceptual activity, yet they are pervasively integral extensions of our lived body and activity within certain situations. So the sidewalk becomes a world-instrument of walking when it vanishes into my walk, just as my body or my cane vanishes as a life-organ within the walking of my lived body.

The above is meant to be a phenomenologically motivated description of a conceptual distinction that follows from the analysis of the body schema, the ontology of the lived body, habit and instruments given above. The next chapter will show how such world-instruments play a role in phenomena of distance and orientation.

¹⁶⁵ See Casey 1993, 102-103; see Casey 1984 on the body and memory.



In conclusion, in this chapter we have seen how the body schema, an anticipatory principle of the lived body that pre-objectively relates the body to the world, is the kernel of the lived body's power of being in the world. We have also seen how the body schema shapes perception by converging the lived body toward the world so that the body's contact with the world is already shaped so as to give correlative perceptual syntheses of the body and things in the world. Thus as Merleau-Ponty writes, "The theory of the body schema is, implicitly, a theory of perception," and therefore for Merleau-Ponty, "The theory of the body is already a theory of perception."¹⁶⁶ We have seen that the shaping of perception through the body schema accounts for the motivational shaping of the phenomenal field with respect to depth perception, in both vision and touch, at least in the first instance. The directedness of the body's motor-perceptual behaviour toward things, through which alone the body anticipates unified things and through which we achieve perceptual syntheses, places things in bodily space. This gives things a primordial depth with respect to the body, a depth whose meaning is in the motor-perceptual relation between the body and the thing, which motor-perceptual relation is required to place the thing in bodily space. But to have this primordial depth of the thing take on objective meaning, and to have the thing be present as having its own unity, and not be a unity merely for the body, it is necessary to see that the body's motor-perceptual relation to things can only be played out within a larger place that supports the interrelation of the lived body and the thing. Given this larger place, the lived body's placement of things

¹⁶⁶ *PdIP* 236, *PP* 206; the latter is the title that Merleau-Ponty gives to the introductory section of part two of *PdIP*, "The Perceived World," in the table of contents.

within bodily space also places things within a larger place; the thing is placed in its own place and is detached from the perceiver's motor-perceptual activity. The unity of the thing is thus synthesised as flowing from the richness (a 'thickness') of a thing beyond the perceiver. The thing's unity in its place motivates our motor-perceptual synthesis of it as having an objective depth. Thus the body schema's shaping of the phenomenal field only partly motivates objective depth; a larger place that relates the body to the thing is required to motivate objective depth. Perceived space is always space in place.

An analysis of the motor-perceptual powers of the body showed that they are shaped by habit, and this led to the claim that the body schema is a primordial habit that can develop in a dialectical manner. The lability of the body schema suggests how spatial perception can be labile; it also suggests that the breakdown of a habit can result in the breakdown of spatial perception. If we cannot carry out the habitual work that brings the body together to achieve a motor-perceptual synthesis, then our spatial encounters with things will be disrupted. Finally, the lability of the body schema and its capacity to form motor-perceptual organs led to the concept of a world-instrument: a part of the world that has its own place, yet becomes integral to the lived body, and thus is integrated into the body schema.

We have now moved from cue-dimensional models, which claim that we perceive space as conscious beings who are merely in a space that we perceive, as something is in a container or as a node is in a system of relations, to the claim that we are embodied beings in the world who sense space with a body by virtue of being *of* a place. We sense space in virtue of the fact that our being in place through our anticipatory relation to things, through our body schema and through our incorporation of place into the body

through world-instruments, gives space sense, and thus our bodies are already *of* the space that we perceive. The next chapter will show how such world instruments become incorporated into the body schema, and how our perception of things as having an objective orientation and depth is motivated by a body schema: our relation to things proceeds both through the convergence of the body's life-organs toward things, which orients things and places them relative to our body, and through world-instruments, which puts things in place.

Chapter 3

The Topology of the Body and Our Sense of Space in Place

In book two of *On the Soul* Aristotle writes:

Empedocles is mistaken in his account of [growth], when he adds that the growth in plants, when their roots spread downwards, is due to the fact that earth naturally tends in this direction, and that when they grow upwards, it is due to the natural movement of fire. His theory of “upwards” and “downwards” is wrong; for up and down are not the same for all individuals as for the universe, but the head in animals corresponds to the roots in plants, if we are to identify and distinguish organs by their functions. (II-4-415B29-416a6, trans. Hett)

Aristotle makes a related point in book two of *Parts of Animals*: “plants get their food from the earth by means of their roots; and this food is already elaborated when taken in, which is the reason why plants produce no excrement, the earth and its heat serving them in the place of the stomach.”¹ Aristotle calls the earth the stomach of the plant—what I would call a world-instrument. His argument would seem to be that in virtue of the fact that the ingesting activity of the plant inherently binds its most important activity into the earth, what is down for animals—the earth—is up for plants. Aristotle, then, has described what I will call a ‘topology’ of the plant—a spatial organisation of its parts, including world-instruments, relative to each other within the ensouling project of the organism, and within the organism’s place. His claim is something like the following: the topology of the plant’s body, which is determined in the plant *qua* unity of nutritive soul

¹ *Parts of Animals*, II-3-650a21-23. I am indebted to John Russon for drawing my attention to this quote and its significance.

and material body, specifies the sense of orientation for the plant. The sense of orientation of each species of organism would then be specified by its cognate topology.

To make a rough translation from Aristotle's claim to the sort of account that I want to pursue here, we only need to note that the body schema is cognate to the soul of the perceiver. In the last chapter we saw how the body schema of the perceiver shapes the phenomenal field so as to specify motives that give meaning to depth. We can now specify this shaping in terms of a topology of the lived body. Our sensing surfaces are spread out in physical space, yet envelop one another within motor-perceptual activity; thus the unification of the body toward things in the activity of perceiving unified things, puts things in place in bodily space. Here a basic fact about the relative spatial disposition of parts of the natural body motivates a meaning within the "ensouled body," that is, within the lived body *qua* shaped by habits that anticipate ways of being in the world. This fact about the body specifies a topology in two senses: spatially, the gross topological relations between parts founds the meaning that these interrelated parts acquire in the lived body; and the meaning of these parts within the schema of the lived body specifies a *logos* of the body as a *topos*, as a place.² In the case described here, this topology of bodily space gives meaning to the lived body's dealings with things in primordial depth; it also motivates the acquisition of habits, and hence developments of the body schema, that enrich this primordial topology of the lived body. The body schema whose development is thus motivated by this topology shapes the phenomenal field through which we place things in primordial depth.

In chapter two we also saw how another fact of the natural body—that its motor-perceptual relations to things depends on its being within a larger place—specifies what I will here call a grasping topology, a topology of relations through which the lived body can hold onto things separate from it. Within the body schema, this topology motivates developments that specify the way that we place things in objective depth. Here we should note that in this topology, the larger place that we are in is continuous with our life-organs of grasp and motion. To this extent the larger place is integral to our body schema as a world-instrument. The grasping topology of the lived body relates the body to place.

Merleau-Ponty's own analysis of orientation suggests how the grasping topology of the lived body figures in motivating a sense of the lived body's orientation, a spatial level, which level is communicated to the world in perception.³ In Casey's minimal description of the body in place, he writes that the upright posture of the human being is the basis of the spatial level, although he elsewhere notes that the relation between the body and dimensions such as above and below and up and down is not straightforward.⁴ Were we to drastically simplify Casey's point, our sense of orientation would be specified by the fact that the topology of our lived body is opposite to that of a plant.⁵ In this chapter I

² Cf. Casey's (1993) various mentions of the topology of the body in part II, e.g., p 81; Casey here refers to the interrelation of the dimensions of the body (left-right, above-below, ahead-behind), which I will return to below.

³ See the discussion of orientation in the chapter "Space" in *PdIP*. Also see the discussion of the level, page 241 below.

⁴ See Casey 1991a, 81 and 101-102.

⁵ Merleau-Ponty's analysis of the relation between perceived orientation and the direction of the body has already shown that this could not be true if we consider uprightness to be given in-itself by physiological specifications of the body: e.g., we do not experience the world as tilting over when we lie down.

give a study of orientation that specifies a more complex and active topology of the lived body, which topology can motivate our sense of orientation; this topology also shows how place is integral to the body schema insofar as it reveals that a power of implacement, of being in place, is integral to our lived body. Revealing such a topology will add to Merleau-Ponty's account of orientation and deepen Casey's account.

Similarly, I engage in a brief study of distance perception that will suggest another topology of the body and show how facts of the lived body and place motivate distance perception.

Together these topologies of the body show how the body schema—the schema that shapes the phenomenal field so as to motivate spatial perception—is founded in facts about the body that motivate both the meaning and development of the body schema. My endeavour here is thus akin to one that we find in *The Visible and the Invisible* and *Eye and Mind*. In *Eye and Mind*, Merleau-Ponty writes that if the human body could not see itself or touch itself, “it would be an almost adamantine body, not really flesh, not really the body of a human being,” but, Merleau-Ponty adds, “humanity is not produced as the effect of our articulations or by the way our eyes are implanted in us”—the humanity of our being in the world “no more precedes the material arrangement of the human body than it results from it.”⁶ We could say that this fact of the body, this topology in virtue of which the lived body can perceive itself, is a *motivation* of our humanity, since it only acquires significance through its antecedent.⁷ Similarly, in his analysis of the look, Sartre has shown that intrinsic to human embodiment is the fact that the human seer must of

⁶ See *OE* 20-21, *EM* 163.

necessity be visible, and he has shown that and how this visibility of the seer—the seer’s topology of exposure—motivates meaning within the being in the world of the seer.⁸

Again, Freud shows how the fact of ingestion and excretion and their topology within the body motivate further significances of the body and its behaviours. (Here it is crucial to note that Merleau-Ponty’s concept of motivation is precisely meant to avoid the reduction of the meanings of these topologies to an in-itself of the body; see his discussion of sexuality on this point.)

My effort in what follows, then, is to suggest how topologies of the body can motivate meaning within spatial perception, by motivating developments of the body schema, which schema in turn shapes our anticipatory motor-perceptual relation to the world. And these topologies will show how place is integral to the lived body. Finally, the accounts that I give will continue my attempt to overturn cue-dimensional models of spatial perception.

Here we should note that the body schema *qua* soul of a human perceiver shapes an *individual* being in the world. As Merleau-Ponty might put it, there is an *a priori* of the species for organisms such as plants, but the habits of our bodies, while giving our life its general form, also embody an individual transcending. While the topology of the lived body is motivated by facts that are mostly common to our bodies, it would also be susceptible of individual differentiation through development.

⁷ See the discussion of motivation in section three of chapter one above.

⁸ Cf. Sartre’s analysis of the look and sexuality in *Being and Nothingness*; compare Merleau-Ponty’s criticism of Sartre in “The Body in its Sexual Being” in *PdIP*, esp. *PdIP* 194-99, *PP* 165-71. I side with Merleau-Ponty in disagreeing with Sartre’s analysis and conclusion, but the basic fact that Sartre discovers is of crucial import.

Orientation in Weightlessness

Let me begin with an analysis of an exceptional case of orientation perception, namely orientation in weightlessness. I follow Merleau-Ponty in turning to an exceptional case because, as he writes, we cannot catch our experience of “top/up” and “bottom/down” (“*haut*” and “*bas*”) “in the ordinary run of living because then it is hidden under its own acquisitions”; instead, “[w]e must examine some exceptional case in which it disintegrates and re-forms before our eyes.”⁹ In the everyday case, our life-organs, world-instruments and their interrelation within the body schema vanish in our pre-objective relation to the world, so their embodiment in matter becomes ‘naturalised’ and is misunderstood as a causal system that has meaning in itself outside of our being in the world; this leads us to posit a cue-dimensional model. But when these meanings vanish and we see ourselves reforming them, we see how these meanings are not given in themselves but through habits that integrate matter into the lived body. Exceptional cases, as I suggested in chapter two, are ‘existential reductions’ in which the phenomena come apart within experience itself.

Merleau-Ponty took up the exceptional cases of orientation perception treated in Stratton’s and Wertheimer’s experiments, in which (when the experiment is described from the third person point of view) the visual field is rotated from the vertical given by gravity. We now have access to experiments in which there is no vertical given by gravity, yet “up” and “down” still appear. The constitution of “up” in the absence of gravity reveals habitual shapings of our embodiment, which are carried over from our

⁹ *PdIP* 282, *PP* 244.

everyday experience. These habitual shapings are concealed in the everyday case by the material acquisitions that 'naturalise' their meaning. To put it another way in anticipation of my results, the removal of gravity is a removal of an outside place that can play the role of a world-instrument of implacement; in the weightless situation the lived body constitutes alternative world-instruments and life-organs of implacement. This lets us see how the lived body 'makes place'; and it shows how implacement figures in the interrelation of life-organs and world-instruments within the body schema. It thus reveals a topology of the lived body in relation to place.

I start with an exceptional case of *orientation* perception for the following reason. I am trying to overturn cue-dimensional models of perception, in which sensory cues are taken to be signs of objective dimensions 'behind' cues. The cue-dimensional model has been put under a great deal of pressure, for example, in the case of colour, since it is relatively easy to toss the old philosophical chestnut about the objectivity or subjectivity of colour into the fire. A cue-dimensional model of colour is not necessarily compelling because the very dimensionality of colour is not at all straightforward.¹⁰ But any one who has taken a tumble down the stairs will not doubt the objectivity of depth, orientation and motion. In the case where there is no weight, however, there is no objective referent for the vertical, and we can therefore see how up and down acquire meaning within the relation between the lived body and its place. Moreover, it seems that it is only in the case of orientation that we can directly and entirely remove the objective referent that cues are supposed to refer to, while leaving other elements of lived experience 'intact.' This last

¹⁰ See Thompson's book for an extended treatment of this issue in the context of general questions about perception.

claim is not at all straightforward at a methodological and phenomenological level, but reflection will show that changes to the appearance of things and their layout is required for the deliberate production of exceptional cases of depth and motion perception. In the case of orientation, however, the removal of gravity or the rotation of the visual field—changes that leave visual layouts materially intact while opening new possibilities of motor-perceptual relations between the perceiver and things—may be sufficient to produce an exceptional case of orientation perception. Exceptional cases of orientation perception thus allow us to focus on the way that the perceiver's motor-perceptual relation to things shapes spatial perception, rather than the way that things and their layouts shape spatial perception.

Now Merleau-Ponty conceives orientation and changes in orientation in terms of the spatial level. The level is not to be thought of as an objective feature of a situation. Rather, the level emerges from the pre-objective orienting behaviour that the perceiver carries into a situation. It is not because things in themselves appear in a certain way relative to an "up" specified by gravity that we see an "up;" rather, in virtue of already having a set of motor-intentional behaviours that shape our motor-perceptual relation to things, things acquire an "up" in relation to our lived body and its anticipations.

I do not intend to give an exposition of Merleau-Ponty's doctrine of the level here (this exposition would be complicated by the fact that Merleau-Ponty also speaks of a level of distance).¹¹ But the question that I am pursuing could be put in terms of the level. The level of orientation is specified by the relation between the lived body and the world.

¹¹ For an exposition of Merleau-Ponty's claims about orientation, the level, Stratton and Wertheimer, see Kockelmans 1976. Also see Mallin (1979), who gives a broad treatment of the level, and Geraets 1981.

According to the account that I am developing, this means that the level is specified by a body schema that sets up certain pre-objective relations between the world and motor-perceptual organs of the lived body, both life-organs and world-instruments. In exceptional cases the level undergoes systematic and determinate changes, which are to be accounted for in terms of the lability of the body schema. But there must be some determinacy of the body schema that accounts for the determinacy of the changes. Merleau-Ponty's analysis has shown one of these determinacies, namely that the body schema specifies organs that embody our power of *grasping* the world. Roughly put, when we take up a situation, our lived bodies enmesh with things such that things are maximally articulate within our anticipatory grasp; and "up" follows the level intrinsic to the way that our maximal grasp is played out through the organs of the lived body.¹² So the way that grasping plays out through organs in a situation—the topology of grasping—specifies the determinate changes of the level. According to Merleau-Ponty, in experiments such as Stratton's and Wertheimer's, the spatial level shifts and reforms when the perceiver's anticipated grasp of the world cannot take hold of the experimental situation, and the perceiver's anticipatory grasp shifts so that the perceiver can live in the new situation and maximize her grasp.

¹² On the relation between grasp, anticipation and level, cf. the following remarks. The level is "a certain possession of the world by my body, a certain *grip* of my body on the world [*une certaine prise de mon corps sur le monde*]." (*PdIP* 289, *PP* 250 emphasis Merleau-Ponty's.) Merleau-Ponty claims that to see a face as having its own top and bottom is to "have a certain grip on it" ("*avoir sur lui une certaine prise*") (*PdIP* 292, *PP* 253). The level is one means of constituting a full world (*monde plein*) that provides me with a "perceptual *ground* [*sol*], a fundament [*fond*] for my life, a general milieu in which my body can co-exist with the world"; this full world is established when "my body is meshed to the world [*mon corps est en prise sur le monde*], when my perception offers me a spectacle as varied and clearly articulated as possible, and when my motor intentions, as they unfold, receive from the world their expected responses"; this meshing is a "pact" between me and the world that at once "gives me the enjoyment of space" and "gives to things their direct power over my body." (*PdIP* 289-90, *PP* 250).

I want to show how being in place is a power like grasp that is similarly integral to the lived body, and I want to show how being in place through life-organs and world-instruments that have a certain topology within the lived body also contributes to the level of orientation.

The specific case of perception of orientation in weightless conditions that I take up is given in an experiment first conducted by Lackner and Graybiel, and then explored in a more thorough manner by Lackner.¹³ What is remarkable about this experiment is the relationship that Lackner discovered between the weightless subject's bodily posture, the subject's position in relation to the architecture of the aircraft, and the subject's experience of the orientation of her own body and the orientation of the aircraft. This relationship was both surprisingly uniform across subjects but also exhibited some systematic variations. I will attribute this uniformity and variation to a topology of the lived body that is common across subjects insofar as we all share a certain sort of lived body and world; but insofar as the meaning of this topology motivates developments of the body schema, it is habitual and so it can vary from individual to individual.

I would like to make a methodological remark here. Phenomenology is at an extreme disadvantage in working from the results of current scientific experimentation. The ambition of science to be a strictly 'third person' endeavour erases the identity of individuals across experiments, abstracts from the history of individuals, and gives little in way of qualitative reports on the experience of subjects. Lackner's experiment also

¹³ Lackner 1992. Unless otherwise noted, all references below to experiments with weightless subjects refer to results reported in this article. Cf. similar results first reported in Lackner and Graybiel 1983; also see Lackner and Graybiel 1979.

I use "weightless" as a simple if scientifically 'inaccurate' term for conditions of microgravity produced either in parabolic flight in aircraft, or in spacecraft in orbit.

abstracts from the details of the environment in which the experiment is conducted. If it is correct to claim that perception depends on habits of embodiment in relation to a meaningful world, then all of these missing—indeed, repressed—data would be crucial to a robust phenomenological understanding of the subject's experience. In what follows I have tried to pay attention to the identity of individuals, and I have also tried to fill in blanks as best I could, for example, through my understanding of the lived body in general and what the inside of the aircraft might look like. I would also like to remark that in this respect current psychological literature is quite different from that of Merleau-Ponty's time and prior—Stratton's experiment, for example, is a first person report on Stratton's *own* experience, and descriptions of the subject's experience and overall life are given in much of the literature that Merleau-Ponty worked on, even if most of the literature documents pathologies. Most of this attention to the living individual subject seems to have been erased during the ascendancy of behaviourism and cognitive science.¹⁴

Since my discussion of Lackner's experiment involves quite a bit of detail, and my understanding of the experiment is complex and systematic, I will first lay out the experiment and my phenomenological account of the results. I will then give an interpretation of my results.

¹⁴ For a nascent challenge to the third-person ambition of science, and an argument that the individual must be the unit of study, see Thelen and Smith 1994, esp. p 90, and see their study of reaching for an example. For a thoroughgoing if misguided argument in exactly the opposite direction, namely that we should talk in the third person even when trying to analyse first person experience, see Dennett's chapter on "heterophenomenology" in Dennett 1991.

In Lackner's experiment, which I will call the free-floating experiment, subjects¹⁵ floated weightless with the long axis of their bodies parallel to the long axis of the aircraft.¹⁶ (Lackner reports other experiments with weightless subjects. I will refer to these below, but the experiment that is my main concern is the free-floating experiment.) In the free-floating experiment, subjects were tested with their bodies in a variety of orientations specified by a combination of the following variables (see figure 1, page 246):

¹⁵ Throughout this work I have tried to avoid use of the word "subject," since I have been trying to follow Merleau-Ponty in overcoming the subject-object distinction. In what follows, though, I will follow scientific convention and use the word "subject" to refer to subjects of experiments, and only in that sense. Subjects of experiments are embodied perceivers. This usage will remind us of the fact that science erases individuals. The subjects in the experiment were sixty eight male college students between 18 and 31 years of age.

¹⁶ The aircraft was a Boeing KC-135, which flew in parabolic flights, with microgravitational (weightless) conditions produced at the top of the parabola. This is the standard technique for producing relatively long term weightless conditions without sending a spacecraft into orbit and was, for example, used to film some weightless scenes in the film *Apollo 13*. Weightlessness lasted for twenty five to thirty seconds during each parabola, and forty parabolas were flown during each flight.

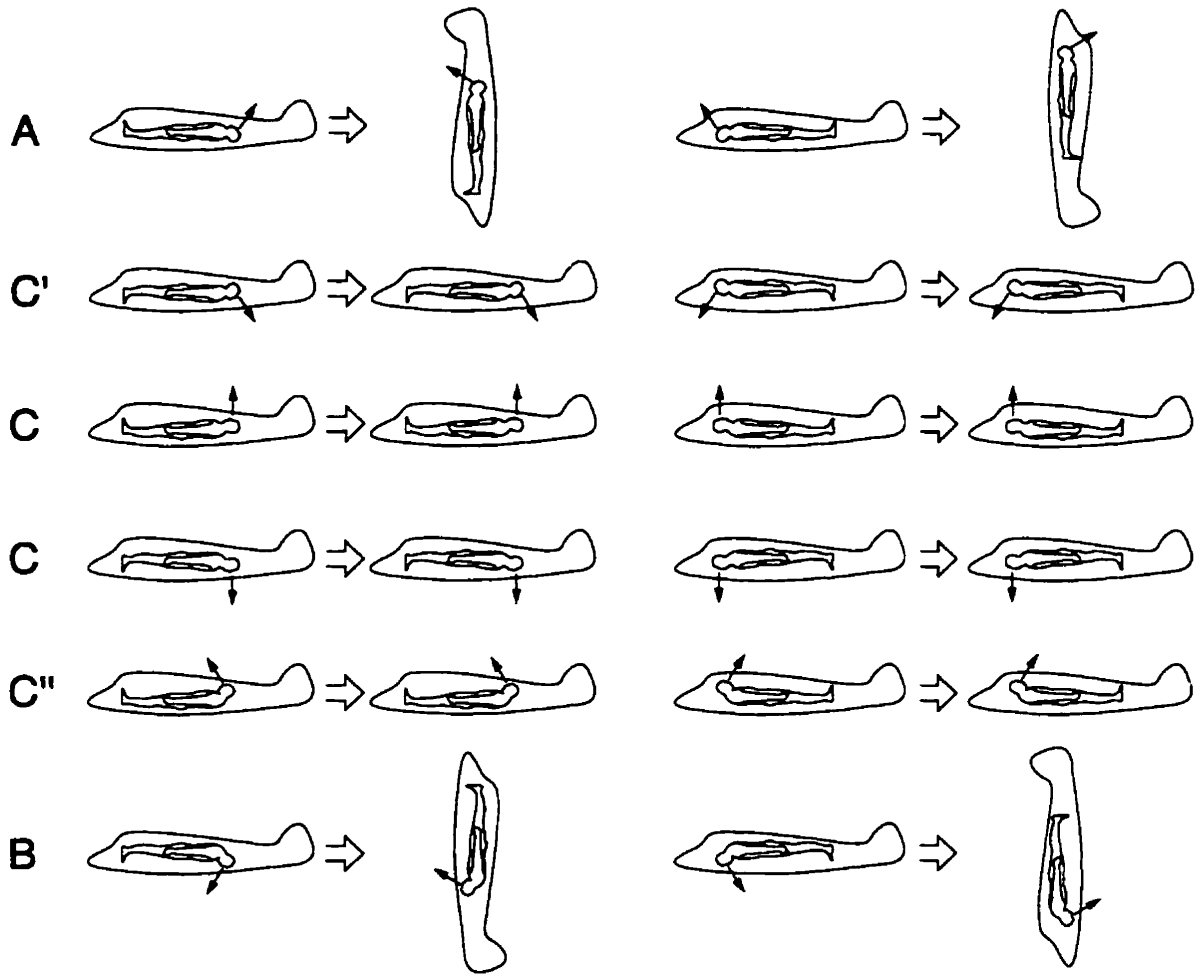


Fig. 1. A diagram representing the results of Lackner's free-floating experiment. The leftmost figure in each pair represents the subject's 'actual' orientation in the aircraft; the rightmost shows the 'perceived' orientation of the subject and aircraft. The names of the cases are given at the beginning of each row. (Diagram and caption adapted from Lackner 1992; I am grateful to Dan Donaldson for producing this diagram.)

(1) head and eyes tilted down toward the body; or, head and eyes straight ahead; or, head and eyes tilted back away from the body;

(2) face toward ceiling and back toward floor; or, face toward floor and back toward ceiling;

(3) head toward the front of the aircraft; or, head toward the back of the aircraft.

To simplify the names of these variables and put them in terms relevant to my phenomenological understanding of the results, I will describe these variables as:

(1) gaze toward body/gaze forward/gaze away from body;

(2) face ceilingward/face floorward;

(3) head forward/head aft.

In most combinations of these three variables, the subject 'correctly' perceived the orientation of the body and the aircraft (see figure 1, page 246). That is, the subject reported what the third person observer would report, namely, that the aircraft is right side up, travelling horizontally, with the body parallel to the fuselage and with head, face and gaze as specified by the three variables. I will call the collectivity of these cases case (C); I also distinguish case C' and C'' within C, which I will explain below.

In case (A), with face ceilingward and gaze away from the body, subjects reported feeling vertically upright in a vertically oriented aircraft; in sub-case (A1), with head aft, the aircraft felt tail up; in sub-case (A2), with head forward, the aircraft felt nose up.

In case (B), with face floorward and gaze toward body, subjects reported feeling vertically upside down in a vertically oriented aircraft; in sub-case (B1), with head aft, the aircraft felt tail down; in sub-case (B2), with head forward, the aircraft felt nose down.

Lackner reports that of thirty-one subjects, twenty-two found that they could consistently change their orientation as described in case (A) and (B), but four subjects

experienced changes in orientation only in case (B), not (A). I will call the four individuals who did not feel vertically upright in condition (A) members of group N.

In trying to understand the results of the free-floating experiment we should notice first of all that we are not dealing with an objective or causal phenomenon. (1) Mere posture does not determine orientation, since the movement of eyes and head away from body results in a vertical orientation only when the face is ceilingward but not when the face is floorward. Since the subject is weightless, the only difference between the face ceilingward and face floorward orientations is the meaning of the architecture that the subject is looking at. (2) On the other hand, we should not think that the influence of the movement of the eyes is solely due to what the subject sees. In separate experiments Lackner found that when entering zero gravity sixty-six of sixty-eight blindfolded subjects strapped into their seats felt as if they were upside down; seven of twenty-seven non-blindfolded subjects strapped into their seats reported that directing their head and eyes at their feet or deviating their eyes toward their forehead made them feel upright; but, when free floating, the same seven subjects could make themselves feel upright by directing their *closed* eyes at their feet or past their forehead. (I will call these seven individuals members of group S¹⁷.) (3) Moreover, in the free floating experiment itself, mere visual architecture does not determine orientation, since the influence of architecture depends on the direction of the gaze toward the body or away from the body. (4) Finally, the known orientation of the craft relative to the earth is also not

¹⁷ Lackner's free-floating experiment was conducted on thirty-one subjects. Of the thirty-one subjects, twenty-three reported that they felt no sense of spatial anchoring within the aircraft when they floated in the aircraft with *closed* eyes (in another experiment); the remaining eight continued to perceive the same orientation with respect to the aircraft when they closed their eyes, although less distinctly. Of these eight,

determinative of orientation: in case (C) the orientation of the craft seemingly gives meaning to the subject's orientation within the aircraft, but in cases (A) and (B) it seems that the perceived orientation of the aircraft is dependent on the subject's perception of bodily orientation. All the objective elements that the third-person observer can specify are internal to one another within the subject's experience of orientation—it is not just the objective value of these elements that varies from condition to condition, but their significance, and the significance of each value is internal to the significance of other values, so it is best not to explain the subject's experience in terms of causal relations between the value of the objective elements, but in terms of the overall significance of the situation.

On the other hand, there is strong evidence that we are not dealing with an immediately intellectual or a merely subjective phenomenon. In the free-floating experiment, the response was uniform across subjects in most respects (see the exception of group N above) and orientation was experienced as beyond the control of the subject. I mentioned in passing several experiments in which weightless subjects modified their experience of orientation, but this required bodily action, for example, changing the direction of the eyes relative to the body; in another experiment a majority of subjects could modify their experience of orientation by donning prisms that 'inverted' the visual field. Last, ten weightless, blindfolded subjects strapped into seats, who were asked to imagine themselves in different positions, felt themselves to be inverted no matter what position they imagined themselves as being in; when the same subjects were tested free-

the seven members of group S could change their orientation as noted in the text, that is, by changing the direction of their closed eye gaze.

floating, only one found that imagining himself in a particular orientation made him feel compellingly and distinctly in that orientation.

Finally, the subject's experience of orientation in Lackner's experiments is, in the terminology that I introduced in chapter two, non-ontonomic¹⁸—the subject's experience of orientation and of the interior of the aircraft does not obey the law of things, but is shaped by the meaning of the experience for the subject. (1) According to Lackner's report, changes in orientation were not experienced as abrupt transitions, but as a fading out of one orientation and a fading in of another, without any apparent physical rotation of the body or aircraft—the initial orientation felt less and less compelling and the new orientation felt more and more compelling. (In another experiment some subjects described this transition as a telescoping motion in which the feet moved down and the head moved up internally through the body, which, Lackner notes, is physically impossible.) (2) As well, in cases (A) and (B) there was “a compelling visual illusion of elongation of the aircraft”—the subjects reported that it seemed as if they “were looking down or up a long tunnel.” (3) Lackner also reports (in experiments other than the free-floating experiment) that the “inversion illusion” was experienced in different ways by different subjects: (i) self inverted, aircraft inverted, (ii) self inverted, aircraft upright, or (iii) self upright, aircraft inverted. In case (ii) some subjects reported objects in the visual field as left-right reversed, while others reported that the visual field was normally oriented but they were upside down while viewing it; in case (iii) subjects reported objects in the visual field to be up-down and left-right reversed; and in cases (ii) and (iii) subjects who experienced a left-right reversal commonly misreached when pointing or

grasping. (4) Finally, in some cases subjects reported a ‘dissociation’ of the visual field, in which parts of the visual field were upright and others upside down. Most extraordinary is that in some cases this was tightly correlated with the subject’s *meaningful* relation to the environment, for example, “when the subject was reading a dial, *the numerals on the dial could seem upright and the rest of the instrument upside down.*”¹⁹ In other words, there are different ways in which the peculiar experience of orientation in weightless conditions is manifest in the subject’s experience, and these manifestations do not necessarily make sense when they are described from the point of view of the law of things (ontonomically). Rather, they have a non-ontonomic meaning that is coherent and objective for the perceiver. (Note that the claim that a phenomenon is non-ontonomic does not entail that the phenomenon is not objective, only that its objectivity cannot be reduced to an objectivity that proceeds from ‘thingly’ laws.)

So we should not say that the perceiver’s experience of orientation is caused by objective elements of the situation that are external to one another—the objective elements are internal to one another within the perceiver’s experience of orientation, and gain their meaning in light of one another. Nor is the perceiver’s experience specified relative to the objective dimensional structures that the third person observer uses to describe the situation—it is non-ontonomic. But neither is the perceiver’s experience purely intellectually determined, it is determined by the embodiment of the perceiver in relation to the situation.

¹⁸ See the discussion on page 139 and prior.

¹⁹ Lackner 1992, 808, emphasis mine.

To give an example of how a causal account is inadequate to the phenomena, let me consider Lackner's own suggestions about the cause of the phenomena.²⁰ Lackner seems to suggest that the subject's experience of orientation is due to a dynamic reorganisation that reinterprets and gives new weights to the different sensory, motor and cognitive factors that "singly and in combination, synergistically specify body orientation in relation to gravity and to the ground or support surface" in the everyday situation.²¹ Lackner's general view, then, implies that sensory factors are determined on their own and prior to their combination, even if they are "synergistic." Lackner also suggests that the different relations between the orientation of the self and the orientation of the environment in the inversion illusion may be due to the fact that self and visual environment are "independently represented and mapped by the nervous system." But this sort of account is open to the sort of general criticism of externalities and ready made structures that Merleau-Ponty launched against the accounts of psychologists of his time (which I have discussed in the context of cue-dimensional models of depth perception in chapter one). Specifically, it treats orientation as a value to be recovered through neural processing, and thus runs into the sorts of circularities of intertwining lower and higher, and earlier and later levels of processing that Thompson et. al. discuss in their article on colour vision, and Patricia Churchland et. al. discuss in their article on vision.²² The attempt to construct distinct channels for different factors and meanings, and to make

²⁰ For further examples of similar causal accounts and a general study of the sensory organs (for, example the inner ear) and neural systems that are at the heart of such accounts, see Howard 1982 and Schöne 1984.

²¹ See Lackner 1992, 809-11.

²² See Thompson, Palacios and Varela, 1992 and Churchland, Ramachandran and Sejnowski 1994. Also see my discussions of these issues in chapters one and two.

distinct factors determinate prior to overall meanings, belies the systematic and meaningful interrelations that we find in the phenomena. For example, the value of the sensory factor which 'detects' weightless conditions would seem to determine the organisation of all the other sensory factors; but determinate orientations of the self are systematically linked with determinate orientations of the world, yet only in given situations of the self in the world; so we could not think that the determinacy of these orientations is prior to and independent from the determinacy of the situation. We would need some sort of 'homunculus' to first understand the interrelation between these variables, determine their synergetic configuration, and then run the system through the supposed algorithm that gives these variables a meaning that the homunculus already understands. The hypothesis that self and visual environment are separately mapped requires that we posit some binding mechanism to account for the systematic interrelation of the orientations of self and environment. And the separate mappings hypothesis could not explain the meaningful, non-ontonomic dissociation of the visual field in which numbers on an instrument dial appear upright while the dial appears upside down—the meaning of the self's relation to the visual world permeates the phenomenal field itself.

So it is wrong to claim that orientation in weightlessness is the result of processing neural signals that encode representations of some sort of objective data. According to this claim, in the 'weighted' situation these representations would recover up and down, but in the weightless situation up and down are 'missing' in the objective world, so the experienced orientation in weightlessness has no referent, it is just a mistake, an illusion. The last resort of the cue-dimensional model is this move, which amounts to the claim that we recover an objective dimension even when there no such dimension is present;

that is, we recover this dimension from errant cues that are no longer *caused* by the objective dimensions that they are supposed to recover.

On my hypothesis, the perceiver's body schema integrates elements of the perceiver's world into the life-organs and world-instruments of the lived body through which the perceiver can meaningfully live in the world. The fact that we place things through such a body schema and such a topology of organs in a given situation, motivates the constitution of a determinate spatial level within that situation, which gives us a world with an up and down, even if there is no 'objective correlate' of up and down. It is not as if in the earthly situation the perceiver recovers a hidden dimension and in the weightless situation the continued operation of the recovery algorithm 'recovers' an absent dimension. In both cases the perceiver constitutes an up and down that are meaningful for the perceiver's lived situation; the constitution of this *lived* orientation may find support in an objective correlate of orientation, but is not the same as it.

The Power of Implacment, and Earth

What, then, does Lackner's experiment reveal about the life-organs and world-instruments of the lived body, and the topology of the lived body with respect to orientation?

I begin with the observation that in everyday experience gravity is one of the elements of the world through which we establish ourselves as placed in the world. (These observations about the lived body's relation to place and the notion of implacment that I develop are inspired by and resonate with Casey's analysis of the body

in place and his discussion of implacement.) In everyday experience, I would argue, the weight that holds us to the ground and that holds objects around us is fundamental to our experience of being implaced amidst things. Our settling into place would not have the same meaning for us if our being in a place did not fixate us through our weight and other involvements, if our implacement were easy for us or other powers to overcome or sway. Neither would our being in a place have the same meaning if our environment were fluid, rather than fixed—standing in front of an object affords an entirely different meaning for our world involvement than does floating in a channel in a coral reef, being dragged back and forth by the waves. The everyday meaning of our experience depends on a *power of implacement* (not to be identified with gravity), a power not merely of being in the world, but a power of being determinately and firmly tied into a determinate place that fixes us within the world. When we are weighted against the ground, it is as if we have a body outside of our own body that gives us a stable world by holding us down, whereas in fluid situations (underwater or in weightlessness) we have to work to hold ourselves in place.

On the one hand, this power of implacement is crucially intrinsic to our being in the world. Our world would not be a world for us if it were not fixed and stable in some way, if we could not have definite involvements with it. As Casey and Ströker as well as Merleau-Ponty show, our world has an up and down, a left and right, and so on, it is not isotropic, but is polarised by our bodily being in the world.²³ But the polarisation of our world can only acquire meaning if we can communicate the polarisation of our bodies to things and people around us in a definite manner. To the extent that our being in the

²³ See Casey 1993, 1991b and Ströker 1987.

world is inherently fixated on being in and toward the world in a definite way, this power of implacement is intrinsic to our being in the world.

But on the other hand, this power of implacement is not *purely* intrinsic to us. Our power of motion, which is internal to our habitual embodiment as finite beings who are not absolutely rooted in place (as against plants), runs through our legs (or crutches, or wheels) against the ground, and thus works to internalise the ground as a world-instrument of motion.²⁴ Likewise, our power of implacement runs through the gravity and ground that are elemental in our everyday world. Our power of implacement could not be purely intrinsic to us, precisely because it is a power of being in a place, of being open to an otherness that can hold us. All power has this structure: to have a power is to be able to work on an other in a specific manner, and this means that the other has sway over us—properly understood, a power is not just work *on* another but work through which we are *with* an other.

The power of implacement intrinsic to our being in the world is thus also external to us, and in the everyday case this external power includes gravity. Gravity and ground, which are seemingly external to us, are thus absorbed into the habitual body schema through which we communicate the polarisation of our embodiment to the world. In itself, the earth's gravitational field accelerates all material bodies toward the earth. But gravity is at work for us within our power of implacement.²⁵ In our everyday situation

²⁴ Cf. Aristotle's discussion (in the last two books of *On the Soul*) of the consequences of our being locomotory organisms—a locomotory organism must already have senses that range over its place if it is to locomote; and in *On the Motion of Animals*, Aristotle shows how ground is internal to the animal's motion toward its goal.

²⁵ Here we should note that gravity is crucial to our embodiment in general—in weightlessness blood and fluid pool in the wrong places, muscles degenerate and bone undergoes transformations.

gravity is given by the solid mass of earth, so gravity and ground are two mutually inseparable elements of experience that are internal to the fact that our being in the world is habitually and naturally a residence on earth—we would not experience gravity unless the very same earth whose mass pulls us against it meets us with solid resistance. Hence I give the name *earth* to that element of our world which gives us weight and thus supports the meaningfulness of our implacement. (The word “earth” here is meant to refer to this component of our situation *qua* elemental, not *qua* the material of Earth the planet, or *qua* this specific substance, e.g., soil).

(My choice of the word “earth” is also meant to suggest a return to Aristotle. This return operates explicitly in Casey’s work and implicitly in Merleau-Ponty’s work. Within the Aristotelian context, the fact that a power of implacement is intrinsic to us and usually runs through earth would signal that earth is elemental. Cosmologically, we might venture the claim that earth makes the difference between space and place: once we have earth in the space of the cosmos, it moves to its place, and this would polarise space, giving it the meaning of place, which orients further polarisations.²⁶)

In our everyday situation, then, earth is a *world-instrument* that holds us in place and holds things in place around us so that we can be involved with them, as we might hold ourselves and things in place around us with technical instruments or natural organs. It is as if the earth is a body outside our own that holds on to us and things as we might hold on to things with our own bodies. Earth is just as much a part of our lived body as

²⁶ My thanks to Eric Sanday for showing me how related claims would work in Aristotle’s philosophy.

the earth *qua* stomach is part of the plant's ensouled body in Aristotle's description.²⁷ For us, earth is a world-instrument of implacement through which we achieve the sort of fixated implacement within the world that is intrinsic to our being in the world. But we must note that neither the earth nor our posture immediately specifies our sense of orientation: Merleau-Ponty's analysis of orientation shows how the lived body's relation to things through earth in a given situation depends on habits, more precisely, on the level that we bring to situations through a topology of grasping. I have turned to an experiment that casts the body into unearthly weightlessness, precisely to expose another topology of the lived body.

To understand the role of earth within the body schema, we must reflect on the nature of earth as world-instrument of implacement. Implacement is a constitutive background of our being in the world, in a very strong and precise sense. When we focus on our implacement within the world, our focus depends on our already being implaced so as to have a place from which to examine the external factors and physiological body through which our implacement runs. That which implaces us always recedes behind our lived bodies, and in this sense implacement is a primordial power: it always already precedes experience, yet is worked out through contingencies. Implacement, then, is a specification of our primordial power of being in the world: to be in the world is to be in a world that has a sense of orientation; we communicate a sense to the world through the polarisation of our bodies, but this requires that we are implaced. So I consider our power of implacement to be a power intrinsic to the body schema. However, in virtue of implacement being an involvement with a larger place that holds us, implacement must

²⁷ See *Parts of Animals*, II-3-650a21-23, quoted on page 234 above.

be worked out through an embodied relation to a contingent externality. In this respect implacement is not an invisible power that recedes behind explorations that thematise it, but can be felt at work within experience, and can be 'seen,' for example, in the solidity of the earth. As a *primordial, contingent* aspect of our embodiment that belongs to the body schema, our power of implacement could thus be realised through different organs of the lived body: any life-organ or world-instrument or world-instrument and life-organ system that can implace us in the given world appears an organ of implacement of the lived body, just as any such combination of life-organs and world-instruments that incorporates our power of grasping is a power of grasping.

In the usual case, our overall posture, as it runs through the body in relation to earth, plays the role of implacing power: thus body-earth is a system of life-organs and world-instrument that acts as an organ of implacement. When we are put into weightless conditions, it is as if this organ of implacement is cut off from our lived bodies. The contingent externality that confirms our habit of having an organ of implacement can be removed, but our power of implacement as habit resists such removal. So, when earth is cut off by the violence of scientific experiments, we manifest something cognate to a phantom limb—the power of implacement continues to play a role within the body schema, even if this role cannot be confirmed by an actual system of world-instruments and life-organs. Here too, as in the case of Merleau-Ponty's analysis of the phantom limb we have to acknowledge that our body, as it were, comprises "two distinct layers, that of the habitual body, and that of the body at this moment."²⁸ But in my elaboration, the habitual layer of the lived body extends beyond the biological body and into the world-

instruments—a body beyond our body—through which we implace our being in the world. We can learn about the grasping identity of the lived body and the phenomenological role of life-organs within habitual embodiment when phantom limbs appear or when biological limbs are repressed. When the earth is cut off by weightlessness, and we work out implacement and orientation in a new way, we can similarly learn about the lived body and the topology of its world-instruments and life-organs of implacement.

Implacement in Weightlessness

With this observation I return to Lackner's experiment. At the outset it is important to note that the subjects in the free-floating experiment do not explicitly act to implace themselves within the aircraft. They do not grab on to things to implace themselves against the walls, and so on. They are put in position by the experimenters. If Lackner's diagrams are any indication, the subject's stance is also passive, with arms at sides, so the subject's bodily comportment bears no relation to the sorts of activity through which the subject could grab on to walls, and so on. What we have to understand is that constituting oneself as being in the world in any given situation is an activity of embodiment, even if it does not involve explicitly visible activities like hanging on or standing up. What we have to see, then, is how the subject's passive and implicit activity of taking up a posture in relation to the visual layout constitutes the subject as being in a certain orientation in

²⁸ *PdIP 97, PP 82.*

the absence of earth, and how this posture-layout relation thus realises the subject's power of implacement in the absence of earth.

"Up" and the Open Body

I will first consider those experimental conditions in which the subject's eyes and head are turned away from the body (cases A and C'). The subject is not involved in any explicit motor relations with the world. However, when thematised, the very posture of the subject, with head bent back and nothing resisting this flexion, habitually delineates a determinate form of meaningful involvement with the world. Tilting our heads and gaze back opens the front of our bodies to the world and also turns us away from involvement with our own bodies; and tilting our head away from our bodies does this to a much greater degree than just tilting our gaze. (For the sake of convenience, in what follows I will use the term "trunk" to refer not only to our torsos, but to our torso plus legs; as well, the connotations of this term are quite suggestive.) In this posture our trunks are not only open but *vulnerable* to the world, since they are hidden from our view and we give up our involvement with the world in front of us when we tilt our head back. To deliberately assume this head tilted back posture and to thus make it a focus of one's comportment, is to thematise the vulnerability of the body and to show that we are not concerned with what may be in front of us or around us. Within the conventions of literature, drama, and daily body language, throwing the head back is a gesture that accompanies laughter, or contemplation, or indicates a carefree attitude that neglects the weight of the world. To assume the head back posture is to claim to co-exist with the surrounding world as being unconcerned with it. But this precisely hides a concern with the surrounding world. To

take up this posture is to be *able* to experience the trunk of our body as securely implaced within the world, it is even to *assert* the secure implacement of the trunk against the world: one who laughs with head thrown back shakes off the world, and one who claims to have triumphed over the world will not only tilt the head back but lift up arms over the head, exposing the trunk to a world that is reconquered in this triumphant contempt for any threat.

Generally, turning the body away from itself—opening it to the world by putting the body out of sight behind the gaze—is to comport oneself as unconcerned about implacement and is thus to assert the trunk as implaced. And the habitual meaning of the open posture, when thematised, is that our power of implacement is somehow at work in the trunk, that is, in the body behind our gaze. For Lackner's subjects this open posture was thematised, since assuming certain postures was the focus of their activity. When weightless in certain situations, experiencing background implacement as going on in the trunk in virtue of this posture may then be sufficient to constitute a comportment in which the trunk plays the role of a life-organ of implacement that functions 'non-ontonomically.' The trunk does not necessarily implace the subject by doing anything with a specific physical meaning, but in virtue of the subject's posture having the habitual meaning of affirming implacement in the trunk, implacement is indeed experienced as occurring there, just as grasping is experienced in a phantom limb, even if a phantom limb cannot physically grasp. In this case the subject may feel upright, without being 'objectively' upright according to any external standard.

In fact this does seem to occur in cases where members of group S (in an experiment separate from the free-floating experiment) experienced themselves as upright

when strapped into seats and looking up past their foreheads, and cases where members of group S who were floating outside of their seats felt upright when they turned their eyes past their forehead with eyes *closed*.

But the perceptual synthesis of our lived bodies and of things is given through one motor-perceptual activity in which both syntheses are correlative and simultaneous. So with eyes opened, the visual layout and the subject's posture together constitute the comportment through which the subject gives meaning to the lived body and world. In the free-floating experiment, subjects who assumed the head tilted back posture felt upright when looking at the ceiling, but not when looking at the floor. Obviously floor and ceiling have different meanings for these subjects, else there would be no difference between their experience of these conditions, given that gravity is out of play; but the meaning of floor and ceiling was not independent from the meaning of their posture. In trying to understand the meaning of floor and ceiling for the subject, we are at a disadvantage since we do not have a good description of the ceiling or the floor, how far the subjects were away from these surfaces, or the history of the individuals (which may be important, since members of group N did experience the inversion illusion in case (B), but did not experience themselves as upright in the conditions under discussion here). So here we have to fill in the blanks somewhat. To experience ourselves as being along a surface that can be perceived as the floor of an aircraft, when our posture puts our gaze ahead of our bodies and habitually puts our power of implacement behind our gaze, is to experience ourselves as implaced somewhere behind our gaze, so as to secure ourselves over a surface that sustains our implacement as horizontal. Perhaps this constitutes our trunk as

a life-organ that is at work against the floor as world-instrument that 'earths' our implacement. This would make sense of case (C').

When we are in a similar posture, but looking at the ceiling of the aircraft, we do not constitute the ceiling as a horizontal surface over which we are implaced. Perhaps this is in virtue of the fact that the structure of the ceiling, which is probably arched rather than flat, and perhaps ribbed rather than continuous, cannot support this meaning (or perhaps the fact that we are looking at a ceiling enters into perception, and while it is semi-habitual for us to lie or crawl along or over a support surface, or even to float over it in water, or survey it from a ledge, we have no such habits of implacing ourselves through our trunk in relation to the ceiling). So in this situation the power of implacement behind our gaze is constituted as at work non-ontonomically in our trunk, somehow implacing us against the ceiling as surface, but the ceiling itself does not actively 'help out' in this implacement, it does not have the role of a world-instrument of implacement. Perhaps the motor-perceptual shape of our implacement in this situation is akin to that which would be found in habits of clinging to a surface; or to climbing or diving upward (although here without movement). The latter possibilities would make sense of the fact that the subject perceives the aircraft as elongated in case (A). If implacement is worked out non-ontonomically in the trunk, this would make sense of the fact that the orientation of bodily space is upright, since it means that the place that links the subject's outstretched body to the world is below the head and gaze when there is no external power at work on the body.²⁹ The fact that the subject's body is at work on its own giving an orientation to the world would also make sense of the fact that the orientation that arises from the

perceiver's bodily space gives an orientation to the entire world: if the subject is head aft the plane feels tail up (A1), and if the subject is head forward the plane feels nose up (A2). The above would then make sense of case (A).

Note that this explanation does not equate the ceiling with "up" and the floor with "down" (if this were the case, then it would be difficult to explain why the subject experiences the ceiling of the aircraft as a 'wall' and the nose or tail of the aircraft as "up" in case (A)). It is the sort of involvement that ceiling and floor afford within the subject's comportment that is important, although given the experimental data it is not possible to determine whether the difference between floor and ceiling is due to meanings attached to the ceiling because it is perceived as "ceiling," or because it looks a certain way and is made out of certain stuff.

"Down" and the Closed Body

We can make sense of cases (B) and (C'') in a cognate fashion. Tilting our head toward our body closes our body in on itself. This self-enclosing posture is protective and turns us away from involvement with what is around us, toward an involvement with the roots of our own involvement in the world. For example, as Neruda suggests in his poem "Ritual of My Legs" in *Residence on Earth*, the feet are at a hostile frontier that connects us and isolates us from the earth:

²⁹ When experimenters pressed the subject's head, subjects felt upside down.

At my feet ticklish
 and hard like the sun, and open like flowers,
 and perpetual, magnificent soldiers
 in the gray war of space,
 everything ends, life definitively ends at my feet,
 what is foreign and hostile begins there:
 the names of the world, the frontier and the remote,
 the substantive and the adjectival too great for my heart
 originate there with dense and cold constancy.

Always,
 manufactured products, socks, shoes,
 or simply infinite air,
 there will be between my feet and the earth
 stressing the isolated part of my being,
 something tenaciously involved between my life and the earth
 something openly unconquerable and unfriendly.

To tilt our head and gaze (or just the gaze) toward our trunk is to make an issue of how our trunk is enclosed in the power of implacement that plants us securely in the world through legs and feet; and it is to *visually* engage in the implacement being worked out through our body in relation to the place that we are in. Existentially, it is a comportment that (when assumed deliberately and thematised) has the opposite sort of meaning as tilting the head back: the back tilted head revels in the presumed implacement of the body and opens us to the world, the inward tilted head closes off the world to check on the implacement of the body. We hold our heads high with pride or contempt in face of the world, and slump our heads against our bodies with shame at the roots of our world involvement.

When weightless in certain situations, this posture, which habitually indicates concern with implacement as being in the trunk, may be sufficient to constitute a comportment in which the trunk plays the role of a life-organ of implacement that functions non-ontonomically, and in this case the subject may feel vertically upright. In an experiment separate from the free-floating experiment, members of group S

experienced themselves as upright when strapped in and looking down at their bodies, and also felt upright when floating outside of their seats with their *closed* eyes turned toward their bodies.

Once again we have to remember that the overall meaning of the subject's perception depends on the interrelation of posture and layout. But there is a crucial difference between the case of the closed body and that of the open body: turning our gaze toward the body not only existentially thematises implacement as being in the trunk, but *visually* thematises that power as being *manifest* in the trunk. This visual thematisation is crucial. In the experiment mentioned in the paragraph above, members of group S, on my hypothesis, experienced the power of implacement at work in their trunk and thus felt *upright* when they were floating with *eyes closed* or when their gaze was bodyward and they were strapped into their seat with *eyes open*. Now in the free-floating experiment subjects with *eyes opened*, face *ceilingward* and gaze toward the body, felt horizontal in the aircraft (case (C'')); but subjects with *eyes opened*, face *floorward* and head and gaze toward the body, felt *upside down*, not upright (case (B)). In all but this last case, either the visible manifestation of the power of implacement is not at issue because the subject's eyes are closed or the subject can find a meaningful, visible manifestation of this power. In the last case, Lackner reports that subjects experienced the transition to feeling upside down when their gaze turned to the point where they could *see* their bodies physically separated from the deck. I argue, then, that in this case the contingent manifestation of the power of implacement is flushed out of the visible area around and behind the subject's body, by the subject's own demanding gaze—the separation of the subject's leg from the floor makes it impossible to provide the

confirming visual manifestation of the power of implacement that is demanded by the gaze. So the power of implacement cannot be at work in the trunk, but it is present as a power of the lived body. Here we have to presume that this posture demands a *visual* manifestation of the power of implacement, and this demand cannot be met when one's feet are visibly separated from the floor. This means that the power of implacement is felt at work in the unthematized world ahead of the subject—it must be somewhere—which also means that the subject is upside down, not fully on “top of the situation,” in the sway of a power that is not supportive of the trunk, a power that on the contrary works against the sort of power that the subject's posture and gaze try to put in the trunk. In this comportment the power of implacement is perceptually shaped as an unspecified non-ontonomic world-instrument ahead of the body, a world-instrument that negates the trunk's power of being a life-organ of implacement, but this does not physically disturb the position of the body (subjects do not feel like they are falling). Since the world-instrument of implacement is ahead of the body, in negation of the trunk, it is still specified in relation to bodily space; thus the meaning of this comportment is that the subject's body is upside down, and the orientation of the aircraft thus follows the orientation of the subject's bodily space, which makes sense of the orientation of the aircraft in cases (B1) and (B2). Perhaps the subject's implacement in this situation is shaped as something like a non-ontonomic version of diving or falling, and then we can suppose that the aircraft is once again perceived as elongated into a tunnel to make sense of this sort of perceptual situation.

At this point I will venture an account of the experience of members of group N, who felt upside down in case (B), but did not feel upright in case (A). One possibility is

that the members of group N have a much more 'intellectual' relation to their bodies than the other subjects: they feel upside down when they see their feet floating above the floor, but postures of the body are not sufficient to change the meaning of their bodily relation to the world. In a way, they behave as if inferential or intrinsic accounts of perception are true. Here it is worth noting that we find a similar behaviour in Schneider: Schneider has a conscious, intellectual relation to his body, rather than a pre-objective relation to his body, so he reasons about the meaning of his body through his senses, rather than just perceiving his body 'from within.' Perhaps members of group N have some training that makes bodily orientation into an intellectual, technical issue for them, for example, perhaps they have some training as pilots, divers or gymnasts, in which case orientation perception could to some degree become a matter of sight, rather than of body. A second possibility is that the open posture of the body has not acquired the same meaning for members of group N as it has for the other subjects. This could be due to the history of their embodiment: if the gesture of opening the body does not have the meaning of vulnerability for a member of group N, then it also might not affirm implacement in the trunk. Some mixture of these two possibilities might account for the experience of each of the members of group N. Unfortunately, without any further information, and there is none given in the experiment, it is not possible to give a firm account of the experience of members of group N.

The above gives an account of the experience of subjects in the free-floating experiment whose gaze is toward the body and whose face is floorward (case (B)). With face ceilingward, subjects with gaze toward the body can see the gap between their feet and the ceiling, but their habitual power of implacement makes sense of this situation by

being behind their backs, holding up their bodies and feet stably in relation to the ceiling with a world-instrument taking care of the subject's implacement (perhaps this is akin to lying down). The orientation of the body would thus be given by the orientation of the craft. This would make sense of case (C'').

The Horizontal, and the Resting Body

I have already covered several conditions in case (C) (the conditions marked C' and C'' in the diagram). In the remaining conditions in case (C), the subject is in a gaze forward posture. Recall that the subject's arms are by the side of the body and the subject has been placed in position by the experimenter. When we put our arms at our sides and do not put work into our involvement with things around us, but look at what is in front of us, our whole surface becomes open to interactions with the world in front. When we stand on earth with our arms at our sides, we put work into our standing, and so we still have a forward and downward involvement with the earth, even if we do not use our arms to interact with it, so our power of implacement is below us in our body, worked out in the relation between trunk as life-organ and earth as world-instrument. But when we rest with our arms at our side—when we do not put work into our legs and let earth work on us—we give up active involvements and open ourselves to the world in front of us. In situations where we have weight, we can only rest in this way (and see the world) when we are lying on something. In this resting posture the visible aspect of our power of implacement is at the periphery of our vision and is not at issue; to rest in this manner is to have the *earth* implace us 'behind our backs,' behind the plane of the arms through which we would be involved with the earth, were our arms directed outward, rather than

being closed in at the sides of our body. To take up a resting posture is to become the patient of implacement rather than the agent of implacement, it is to be implaced by a world-instrument.

The arms at the side and head forward posture, when thematised, would thus put the power of implacement at work in a world-instrument behind the back of the subject, and when the subject is weightless in certain situations, this may be sufficient to make the subject feel horizontal. With eyes open, the meaning of this posture can be fulfilled when the visual layout confirms the meaning of this posture of the body. In Lackner's experiment we find this happening when the subject is either face floorward or face ceilingward. We can presume that in this situation the subject can meaningfully comport himself as being implaced by an external power, an unspecified world-instrument, that holds the subject as either looking up at the ceiling, or as looking down at the floor. In these cases the power of implacement is a world-instrument that works on the body, so the orientation of the body follows the orientation of the aircraft. This would make sense of the remaining conditions in case (C), but here I would want a better account of why the ceiling could support the meaning of the resting posture (this would require a better description of the layout).

The Sense of Orientation and the Weightless Body

This sort of existential-phenomenological interpretation of Lackner's experiment meshes with some other data about weightlessness. We saw that without earth as a world-instrument of implacement, the subject's visual relation to the world and her postural relation to her own body motivated her to constitute her power of implacement as being

worked out in a determinate life-organ or an unspecified world-instrument different from earth. One would expect that if the perceiver, unlike Lackner's subjects in the free-floating experiment, can become explicitly and actively involved in meaningful motor-perceptual activity with the world in front of the body, then the habitual meaning of the perceiver's motor-perceptual activity will shape the subject's power of implacement. This shaping would take place in relation to the task that is visually displayed to the perceiver, in which case the spatial level would be established in the manner determined by the topology of grasping, and would be similar to that found in Merleau-Ponty's analysis of Wertheimer's experiment, in which the world comes to rights a while after the subject views a room that is visually rotated 45 degrees from vertical. The astronaut E.G. Gibson reports that on his Skylab mission:

... being upside down in the wardroom made it look like a different room than the one we were used to. After rotating back to approximately 45 degrees or so of the attitude which we normally called "up," the attitude in which we trained, there was a very sharp transition in the mind from a room which was sort of familiar to one which was intimately familiar. (E.G. Gibson, "Skylab 4 Crew Observations," 24)

In everyday situations, when we are involved with something in front of us, we experience our power of implacement as worked out in the trunk and earth so as to support this involvement, and the meaning of our implacement is modified by the way that our involvement works through earth—for the writer writing on a table, the body is implaced as up, for the auto-mechanic working under the car, the body is implaced as horizontal. In the absence of earth we would expect that our power of implacement is determined solely by the need to support our active relation with our environment, and this would lead to the constitution of habitual orientations that make sense of our involvement with the world. When E.G. Gibson rotates his body to within 45 degrees of the attitude in which he trained—his *habitual* attitude of involvement with the

wardroom—he can engage in his habitual involvement with the wardroom, and this means that his body schema implaces him so as to support this sort of engagement, so he undergoes a non-ontonomic transition to feeling upright, which transition also constitutes the room as familiar rather than strange. Note that the sharp transition to uprightness occurs when Gibson’s body is up to 45 degrees away from the habitual attitude of involvement, as in Wertheimer’s experiment. We must conclude that it is the lived body’s possibility of involvement with the world, its grip on the world, and not the objective direction of parts of the body on their own that determines “up” in this case. But on the other hand, the lived body’s possibility of world involvement does depend on the objective attitude of parts of the body—Gibson experiences the room as familiar only when he is positioned within 45 degrees of his habitual direction of involvement. Another Skylab astronaut, Kerwin, reports that he could play with his sense of up and down by rotating his body, turning walls into ceilings and vice versa (both walls and ceilings were work surfaces in Skylab). By rotating his body in a manner that gives up its habitual commitments to a fixed attitude and instead plays with different attitudes of world involvement, Kerwin set up different sorts of possible involvements with the craft and gave different determinations and meanings to his power of implacement, thus changing his sense of orientation. On the other hand, Kerwin also tried playing with closing his eyes to “make everything go away,” but the first time he tried this he reports that his instinct was to “grab hold of whatever was nearest and just hang on, lest I fall.”³⁰ Cutting off all involvement with the world cut off the possibility of implacement and set off an experience of falling. The above examples show how orientation is enclosed within the

³⁰ Kerwin, 27.

subject's postural relation to the surrounding world. Finally, we can note that this sense of orientation not only depends on the subject's postural relation to the world but on the world affording a meaningful involvement to the subject: according to Lackner and Graybiel, "one of the things that bothered Skylab astronauts most was a lack of a structured "visual horizontal and vertical" in the docking adapter of their spacecraft."³¹ Other experimental data, I think, can be understood along similar lines and lend support to my interpretation of the phenomena of orientation in weightlessness, although I cannot go into detail here.³² When the subject can work to grasp the world in weightlessness, "up" is specified by a topology of grasping similar to the one that Merleau-Ponty discovers in his analysis of orientation.

But when we are passively floating in a weightless environment a different topology comes into play. Here I will summarise the features of this topology.

In everyday habitual experience, when we thematise the opening of the body to the world and expose its vulnerability to the world, by turning eyes and head away from the body, we experience and *affirm* that our power of implacement *is* at work in our trunk. In weightless conditions within an aircraft, looking at the floor in this posture can motivate the perception that we are along a horizontal surface (case C'), and looking at the ceiling in this posture can motivate us to perceive ourselves as looking up a tunnel. Since our trunk implaces us, the orientation of the tunnel follows the orientation of our bodies. This makes sense of case (A).

³¹ Lackner and Graybiel 1983, 50.

³² For discussions of relevant phenomena, see, e.g., Gurfinkel, Lestienne, Levik, Popov and Lefort 1993 (cf. Gurfinkel and Levik 1991); also see Mittelstaedt and Glasauer 1993.

In everyday habitual experience, when we thematise the closing of the body and the protection of it from the world, by turning our head and eyes toward the body, we experience and are *visually concerned* with a power of implacement *affirmed* as being at work in the trunk. In weightless conditions within an aircraft, looking at a ceiling in this posture can motivate us to perceive ourselves as being under a ceiling (case C''), but when looking at a floor no such power of implacement is visibly at work in our trunk or behind our backs, so we can be motivated to perceive ourselves as subject to a world-instrument that negates any power of implacement in our trunk, and thus we can perceive ourselves as looking up a tunnel with our body pointed head down. In this case the power of implacement negates our trunk and this power is thus determined in relation to the trunk, so the orientation of the tunnel follows the orientation of our bodies. This makes sense of case (B).

We presume that subjects in group N, who feel upside down in case (B) but horizontal (rather than upright) in case (A), in virtue of their history or training, either: (1) do not experience the open body posture as expressing a vulnerability of the body, even though they do have a concern for their attachment to a situation that is expressed in the closed body posture; or (2) have an somewhat 'intellectualised' relation to bodily experience, such that they judge the orientation of the body on the basis of visual cues, instead of experiencing their sense of orientation as being shaped by posture.

In everyday habitual experience, when we turn our head and eyes forward, but keep our arms to our sides without explicitly putting work into our being in place, we adopt a rest posture relative to the world, and experience our power of implacement as going on behind our view in a world-instrument outside of us. In weightless conditions in an

aircraft, looking at either a ceiling or floor in this posture can motivate us to perceive ourselves as being held in place opposite to the ceiling or floor. Since our implacement is carried out by a world-instrument beyond us, the orientation of our bodies follows the orientation of our world. This makes sense of the four instances that constitute case (C); the remaining cases (C' and C'') are accounted for above.

The above discussion of Lackner's results and Kerwin's and E. Gibson's reports, then, gives an account that shows how a spatial level is constituted in both active and passive conditions in weightless environments. Lackner's experiment suggests a topology of the lived body that I will take up below.

At this point it is crucial to note that objective postures of the body are not the *cause* of experienced orientation. The shifts of the power of implacement from one organ to another are non-ontonomic, and reveal the same sort of momentum of human existence that Merleau-Ponty discovered in cases such as the phantom limb and anosognosia, only in this case the phantom organs may refer to a place outside bodily space, rather than to a limb within bodily space. The uprooted plant is neither up nor down, but an unearthed human body feels for the earth. An objective turn of the body toward itself could never reveal the "infinite air" that Neruda discovers between our feet and the earth.³³ Postures of the body cannot *cause* the sort of concern for embodiment that puts implacement in the trunk. Rather, adopting the head-toward-body posture *constitutes* our embodiment as concerned with itself in relation to the earth, and thus constitutes our embodiment as expressing an *embodied* perceptual self-awareness of an essential finitude that reveals our dependence on our implacement against the earth; similarly, covering our naked body in

the face of another's gaze constitutes our embodiment as concerned with itself in relation to others, and thus constitutes our embodiment as expressing an embodied perceptual self-awareness of an essential finitude that reveals our interdependence with other human bodies.³⁴ In the primary instance, in order to feel ashamed we have to cover ourselves; and in order for the weightless person to feel upside down, she must look at her feet and see them leaving the earth behind (cf. Kerwin's report cited above, that he had to move his body to change the sense of up and down; also cf. Lackner's report that imagination is not sufficient to produce a change in up and down). In the earthly and primary case the gesture of hanging our heads low immerses us in our rootedness in place; when this meaningful topological configuration of the body becomes an acquisition of the body schema, the gesture can then become invested with an habitual meaning that is operative even in unearthly situations; but even in this secondary case of expression, the gesture does not cause the meaning, but expresses it, that is, sustains the meaning through the body.

The Topology of the Lived Body's Sense of Orientation

The important result of my interpretation of Lackner's experiment is that it allows us to describe another topology of the lived body and show how this topology motivates our sense of orientation in relation to place. I will call this topology the topology of uprightness.

³³ See "Ritual of My Legs," quoted on page 266 above.

³⁴ See note 8 above.

This will let me show how a fact about the body—the interrelation of front and back and up and down within the articulations of the natural body—motivates significance within the body schema of perception. Casey’s minimal description of the body in place distinguishes three dimensions of the body: ahead-behind, left-right, and above-below. He shows internal relations between the pairs in these dyads (how what is ahead turns into what is behind, and so on) and shows how the left-right and ahead-behind dimensions relate to one another in movement. As well, he shows the asymmetries in these dimensions, the parallels between these asymmetries, and the way that these dimensions transpose onto one another (e.g., what is above us on the map is in ahead of us on the road). Casey, as I have noted in the beginning of the chapter, also closely allies the above-below dimension with the uprightness of the body.³⁵ To this my discussion will add an interrelation between front-back (the ahead-behind of the body itself) and above-below, and thus show how up and down depend on the body’s motor-perceptual relation to itself within the upright posture through which we habitually implace ourselves in a larger place; up and down, which stem from above and below, do not depend on our upright posture *simpliciter*.³⁶

The analysis of Lackner’s experiment lets us derive the following claim about the topology of the body: our human experience of orientation is shaped by the body schema of an embodied being in the world that can put its habitual power of implacement into question through specific articulations of the body that are biologically fixed by the

³⁵ See Casey 1993, chap. 4.

³⁶ By relating ahead-behind to above-below, my discussion will also add to the description of the “spatial framework” that the human body, according to Casey, brings into being. (See Casey 1993, 102-103.)

relations between head, upper torso and arms, trunk and legs. *Contra* Empedocles, heads do not spring up without necks³⁷, they are intrinsically attached to a neck—this is a fact of our biological body. The general motor-perceptual relation that we have to our own bodies is governed by the articulation of the body at the neck: we can see the fronts of our bodies if we choose to, but (for the most part) we cannot see our backs. This fact of the body inherently distinguishes a vanishing back from a front whose visibility is under our control, and a visible “ahead” from an invisible “behind.” This fact of the natural body specifies a living topology of the lived body, and can motivate meanings that initiate habits that shape the body schema. For example, if the history of our embodiment has been one of abuse or terror, the fact that the back intrinsically evades the lived body’s own protective relation to itself can motivate us to develop a body schema that incorporates the back as an ill defined region of vulnerability or terror.

The topology described above is one in which we are active. The neck which supports our outward look also supports a look toward or away from the body; the latter two looks either involve us with the embodiment that supports our look or neglects and hides this embodiment from us. In other words, we can actively and dynamically transform the meaning of our trunk within our embodiment, in virtue of the fact that we can control the self-relation that is articulated in the connection between trunk, neck and head (but this control is limited, since we cannot exclude intrusions from the place that we are dependent on, which intrusions can force meanings on our embodiment). If our heads did not have a reigning position in our bodies, and if our bodies did not show themselves as the support of our heads, then the gesture of hanging one’s head to express

³⁷ DK Frag. 57. Cf. Aristotle’s criticism of this claim in *On the Soul* III-6.

shame or bending it to express worry would have no meaning and, barring some other possibility of the lived body, we would not have the same ability to articulate a relation to our own power of implacement. But since our heads do have this relation to our body, the relation between the head and the body is ripe to motivate habitually acquired postural meanings through which we express the meaningfulness of our own relation to our own embodiment, in particular our relation to the trunk as a life-organ that is habitually at the root of our power of implacement, through its join with earth. Indeed, this relation between head, trunk and earth inevitably acquires postural meanings, because so much is at stake in various ways of opening or closing our embodiment to the world through changing the direction of the head; even if an individual cannot or does not engage in these gestures, she will see them at play in humanity around her. This fact of our embodiment, then, specifies a topology of the lived body that motivates the development of a body schema within which these facts acquire meaning for our being in the world.

What I have argued is that the intrinsic articulation and self-relation specified within the topology of the lived body motivates certain acquisitions of the habitual body schema, which acquisitions invest postures with meaning with respect to life-organs and world-instruments of implacement. It is thus the case that the meanings that we give to the above and below, and to up and down, are not simply specified by the fact that we are upright, but by the fact that our uprightness is that of a body that can relate to its front and not to its back, whose back is always vulnerable, but whose vulnerable front is under the protection of a head that can be turned toward or away from the body. This shows how front and back (and thence ahead and behind) are related to above and below within the lived body's posture in place, and also how the body's relation to place through its organs

of implacement can become thematic within the lived body's posture, at a pre-objective level. Up and down are not simply given by the uprightness of the body as a simple physiological fact, but by the lived body's relation to itself as a being that is perceptually self-aware of its own embodiment. These interrelations of front and back, above and below shape acquisitions of the body schema. We have seen how these acquisitions of the body schema that specify relations between posture, implacement and world, may be sufficient to communicate a sense of orientation to the world when the body is unearthed. But it is also reasonable to suppose that these acquisitions colour the meaning of above and below in earthly situations, which could go some way to explaining some of the colourations that Casey and Ströker discover in their discussions.

With this analysis of the relation between the topology of the lived body, the body schema, and our sense of orientation, I am in the position to suggest answers to two questions that follow from my analysis of Lackner's experiment, namely, what can we generalise from this experiment, and in what sense is the perceiver's experience of orientation in weightlessness objective.

I do *not* want to make the general claim that the topology of the lived body that we discovered beneath the body schema of Lackner's subjects acquires the same significance for all perceivers, although this topology clearly has some sort of general significance for all human perceivers. The correlation between posture, situation and experienced orientation was mostly uniform across subjects, although there were exceptions (namely, the experience of members of group N) that had their own internal coherence. And Lackner observes that the various "inversion illusions" abate over time in a fragmentary and gradual manner. I would claim that this variation both across perceivers and through

the history of individual perceivers is precisely due to the fact that the topology of the body only rises to significance within an *habitual* body schema that communicates this topology to the world. The body schema is essentially historical and individual, it is a principle of a body. So even though there are certain facts about our body that are common to us all and that motivate the development of meanings within the body schema, it is possible for our histories to infuse these facts with different meanings and for those meanings to shift over time as we acquire new habits.

On the other hand, I *do* want to make the general claim that the topology of the body that I outlined is of universal significance in the human experience of orientation. This topology inevitably puts certain articulations of our embodiment into question with respect to our implacement, and thus motivates the acquisition of meanings around certain articulations of the body. In the history of different individuals the meanings acquired by a specific articulation may be different, but the facts of the body around which these meanings are acquired must be taken up within the body schema, even if this taking up is manifest as a suppression, repression or unconcern. These facts of the body are thus a universal seed that motivates the growth of a body schema that in turn shapes motivational relations within the phenomenal field with respect to orientation perception.

Given this variability, perceived orientation and the meaning of orientation will vary across perceivers in a given situation. But this is not to say that the dimensions that we perceive have no objectivity. The precise advantage presented by the case of orientation in weightlessness is that it wipes away the sort of external, in-itself objectivity that spatial dimensions commonly acquire in the assumptions built into our everyday world. In the weightless conditions of Lackner's experiment it is objectively true for the perceiver that

she is upside down and the aircraft is pointing up, even though being upside down in this way may have a different sense than being upside down on earth (and even though the subject might also *think* that her orientation is different than her perceived orientation); but at the same time, it is objectively true for the perceiving experimenter that the aircraft and subject are horizontal. Here we are dealing with different objective senses of orientation, each constituted within a different way of being in the world. The absence of a non-controversial objective correlative of up and down in the case of weightlessness forces us to acknowledge what is in fact true in every case, namely that our perceiving being pre-objectively and anticipatorily constitutes the standard that gives perception objectivity. It may be, and in fact is the case, that we share this standard of objectivity with other people, but this is not because we both arrive at the same accurate reconstruction of a determinate dimension that has its objectivity external to our perception: it is in virtue of the fact that we share a world and the form of embodiment through which we perceive the world. Astronauts who are working on the same task together side by side will share a perceived “up,” people who share a cultural, geographical and architectural world may share senses and values of above and below.³⁸ It may be that one and the same determinate thing can have multiple determinations under different objective standards, but this does not remove the objectivity of each standard: the lines in the Müller-Lyers illusion are the same length only when we measure them with the ruler or when we cover up the arrows, but to perceive the illusion through tools is to institute a standard of objectivity that is different than the one given us when we

³⁸ See Casey 1993 on the latter point; Casey deals with both the variability and commonality of these values. Cf. esp. pp 88-92.

perceive the illusion through life-organs of perception. We have to realise that objectivity is not an externality that we recover, but an internality that we constitute within our being in the world.

One last note: I am not trying to suggest that my description of this topology of the body is exhaustive, since I have given it from the point of view of the isolate body. The fact that lowering the head and gaze disconnects our looks from the looks of others is crucial to understanding this topology of the body, and this suggests that the topology of a body is always merged with the topology of other bodies that sustain and deny our own bodies. I will say a bit more about this below and in the conclusion.

The Body's Sense of Orientation, and Place

As I noted in the beginning of the chapter, Aristotle argued that an organism's topology coloured the meaning of up and down for it—what is down for animals is up for plants. Now we have seen that for human beings, the active articulation of the body with respect to its uprightness specifies a topology of the lived body that acquires significance in the development of the body schema. The communication of such a body schema to the world adds further shadings to the meanings of up and down, shadings that are not only dependent on the fact that we are upright *simpliciter*, but on the way that our uprightness can question itself through the articulations of the perceiving body. These shadings are thus dynamically reconfigurable through changes in posture, and can develop over time with the acquisition of habits. Merleau-Ponty's analysis of orientation in terms of a topology of grasp is here supplemented with an analysis of orientation in terms of a

topology of uprightnes. This analysis shows how in unearthy situations the topology of uprightnes shapes our sense of orientation, given the interrelation between our posture and visual layouts in a situation that presents us with a habitual task. Finally, it suggests that the same topology of uprightnes may colour our sense of orientation in earthly situations. What does this analysis tell us about the relation between bodily space and place, a question that was raised in the last chapter's claim that the motivational shaping of the phenomenal field with respect to depth perception depends on a relation between bodily space as a place for things, and a larger place that holds both things and the body?

I think that the analysis of orientation tells us two things. First, it tells us that a relation to place is intrinsic to the body schema insofar as orientation perception seems to depend on a power of implacement. The phenomena of Lackner's experiment do not seem to make sense if we take them to be the result of sensory inputs to the body that are messed up by lack of a gravitational field. But the phenomena do seem to make sense if we see that the lived body has a momentum of existence such that it tries to incorporate a power of implacement into itself in the absence of an external power that holds the lived body in place, just as the lived body will sometimes incorporate an organ of grasping into itself in the absence of an actual limb. On this view, then, external powers that implace us should be conceived as world-instruments of implacement. So place is internal to the lived body. The humanly shaped earth feeds us a sense of place as the mute soil feeds the plant nutrients, and in both cases the earth is absorbed into living bodies—only in our case we do not consume the earth but are aware of it and concerned for it. On the other hand, this conception makes the externality of anything somewhat ambiguous, and we saw that in the absence of an external place that can actually hold us down, the trunk of

the body itself seemingly becomes an instrument of implacement, the body becomes its own place of implacement. But here too the way in which the lived body implaces itself depends on a larger place. So a larger place is intrinsic to the lived body's sense of orientation, and in earthly situations the larger place that weighs us down should be considered a world-instrument of implacement that is continuous with the life-organs of the body.

Second, the particular phenomena of Lackner's experiment forced us to an examination of the postures of the body and their meaning for being in the world. The essential fact that motivated these meanings is the relation between front and back and above and below within the topology of the lived body. In virtue of this topology, the thematisation of various postures allows the lived body to question its own relation to place in various different ways: to assume place as the support for frontal relations, to neglect place and thus affirm it in opening up the body to the world, and to inspect place and thus worry about it in closing the body to the world. This means that place not only is integral to the body, but that the body's articulate, upright posture motivates a self-awareness of the body's being in place. We are beings for whom our being in place is such as to put our being in place into question at the level of perceptual self-awareness, through a bodily concern, and this colours our sense of orientation in place.

Here, too, we have overcome the cue-dimensional model of spatial perception. The perception of orientation is not the perception of a dimension that is specified external to our being in the world. It is not the case that the sensations of our bodies together with our postures cause us to perceive certain orientations. Above we have seen that our overall relation to place, through which our body postures itself and obtains certain

sensations, and our body's meaningful relation to itself in place, already enclose certain meanings of orientation. These meanings motivate acquisitions of the body schema that shape our anticipatory motor-perceptual relation to the world. These meanings are communicated to the world in perception, in response to the solicitations of the world, solicitations in virtue of which we take up certain postures with respect to certain places. And as Merleau-Ponty shows, our overall orienting relation to place also depends on the pre-objective anticipatory motor-perceptual relation through which we grasp the tasks at hand in place. It is our grasp, posture and concerned relation to our bodies and our place, then, that constitute the objective meaningfulness of our orientation in the world.

Distance in Place

We have seen that orientation phenomena reveal a topology of the lived body and an internal relation between the lived body and a larger place. In the case of orientation perception, the latter relation is specified with respect to our primordial power of being implaced. Orientation reveals this connection in quite a powerful way, because we can unearth the body by putting it into space, and see how the lived body, as it were, insists on there being an implacing earth. In chapter two I developed a quasi-theoretical argument that suggested that a relation between the body and a larger place that holds the body and the thing is crucial to depth perception, and that this relation is shaped by what I have now identified as a topology of grasping. What I would like to do here is return to depth perception and show how a larger place that holds the body and the thing is crucial to depth perception, only this time I will specify this relation not with respect to powers

of grasping things, but with respect to the powers of *going-through* the world around us and *holding things off*. The phenomena in question do not concern the depth between me and a thing that I can handle, but distances in the larger place that holds me. So I here distinguish depth from distance—depth is between ourselves and things in place, but place itself possesses distances. The case of distance and depth seems intrinsically more difficult to analyse through experience—we cannot make the objective correlate of depth vanish, as we can with orientation; so my remarks in this section will be programmatic and sketchy, rather than substantive.

As in the case of orientation perception, we need some help from experience itself in order to break through the acquisitions and assumptions of everyday experience, to get beyond the dimensions posited by cue-dimensional models. So once again I turn to an exceptional case, specifically an illusion of distance perception.

The illusion is one that I have noticed in my everyday involvements in the cityscape. I call it the alley illusion. The illusion is as follows: when I look down an alley that runs behind or parallel to a main street, the distance through the alley appears to be different than the distance through the street that it parallels. In many cases—in my experience, where the alleyway is behind commercial buildings that have a uniform surface, or behind other buildings that similarly form a more or less regular, uniform tunnel-like surface—the opening of the alley onto the street at its far end appears to be much closer to my place in the alley than the corresponding street corner seems to be from a corresponding place on the street. This effect seems to be amplified when the alley runs across a number of

city blocks with roadways crossing the alleys.³⁹ In other cases—where the alleyway opens up on to the backyards of houses—the distance seems not so much to be longer or shorter than the alley, as *different*.

Here we can set up a nice contrast between the phenomenological approach that I have been working out, and the approach of the cue-dimensional model, thus deepening and reinforcing my general claims about spatial perception. An account based on a cue-dimensional model would say something like the following. There is an externally determinate distance in the world that is the same in both the alley and the street. But this distance is manifest in different ways in the cues that are provided by the structures built along this distance. Despite the fact that the cues are ‘physically attached’ to the same distance in each case, the nature of the cues either causes our perceptual systems to engage in a different sort of process of recovery of distance, or the specific value of the cues causes us to recover a different result from the same process. A cue-dimensional model would, for example, refer to the narrow angle of view, the sorts of shadings and regular distance markings presented by the backs of buildings, the absence of the details that we find on the street, and so on, in order to explain how it is that the cues available in the alley cause us to see it as shorter or longer than the street.

The best version of a cue-dimensional model, an ecological or dynamic systems model, would combine these disparate cues into a structured affordance.⁴⁰ Instead of positing independent cues that contribute data to a recovery algorithm fixed within our

³⁹ For Torontonians, nice examples of such alleys can be found running parallel to Bloor on the south side of the street between Spadina and Bathurst, or parallel to Spadina on the west side of the street from Bloor south across Harbord to Russell St.

brains (or some such), the ecological or dynamic systems model sees the cues as internally united within a causal structure that exists only in the interaction of our bodies and the environment, and so information about distance is available 'directly' within the causal structure of the affordance.⁴¹ Instead of importing causal structures from the outside world into our internal process of recovery, then, ecological theories 'leave' the causal structure in the outside world, in the body-environment relation through which we explore the world, and thus claim that we have direct contact with the determinate externalities that we are to recover. But this causal structure is still imported into perception and it is still external to our being in the world. It could only explain our *ecological* relation to the environment, not our *human* relation to the world, and although it admits that this process of recovery is played out in our biological bodies themselves, it still essentially claims that we recover external dimensions through an external causal system, rather than constitute dimensions of our world.

What I have been urging us to see, following Merleau-Ponty, is that the agent of perception is not the biological body but the lived body. The lived body with its anticipatory body schema is not reducible to a being whose measures and sensory surfaces are causally coupled with the measures of beings around it. The lived body is a being in the world, for whom the fact of being in the world is such as to already put depth and distances into question. So depth and distance can close down and open up as our bodies change our motor-perceptual questioning of the world.

⁴⁰ See the appendix of chapter one for a discussion of ecological psychology and dynamic systems theory.

The experience of the alley illusion suggests that the different forms of distance experience are not reducible to different results caused by different structures of cues, which results represent a distance that is externally determinate on its own. We do not think or approach alleys as physical shortcuts, as if they are in fact shorter just because they appear to be shorter. The whole bothersome illusoriness of the alley illusion rests in the experience of the alley as being and not being the same length as the street. We have different sorts of experience of objective distance in alleys and streets, and this difference is not to be construed in terms of quantities of external measures. The experience of looking down a street and then being surprised by the difference in distance down the alley parallel to it is like being inside a Müller-Lyers illusion: the distances perceived along these different cityscapes are objectively incomparable, since each motivates a different internal standard of objectivity. To construe the distances within these cityscapes as being the same or as being objectively comparable to each other requires an operation that is equivalent to using a ruler, or covering up the arrows in the Müller-Lyers illusion—for example, we must picture the situation not as we experience it from within, but as we would look down on it from above in an aerial photograph or map, or we must reason that the distances must be the same, even though we cannot experience this sameness.⁴² Such an operation institutes an external standard of comparison, and by importing the determinacies of external media into perception, the operation takes us out

⁴¹ See Gillam 1995, Cutting and Vishton 1995 and other works in Epstein and Rogers 1995 for synoptic accounts of the cues that might be available to such accounts. See Gibson 1950, Gibson 1979 and Neisser 1976 for suggestions about an ecological approach to such a problem.

⁴² Cf. Merleau-Ponty's point that the ready-made worlds of empiricism and intellectualism look at depth as if from the outside (see "Space" in *PdIP*).

of perception as it is lived. Instead of doing this, we want to determine what motivates the constitution of these different senses of objective distance.

In this regard, I think that the relationship between the alley illusion and our habits is quite suggestive. For example, at least in my experience, when an alley becomes my usual avenue of travel, rather than an exceptional route or view, the experienced difference between it and the street becomes less a matter of a judgement of distance and more a matter of a different sort of travel. Or perhaps a better way to put this is that in my initial encounters with the alley the difference in involvement invited by the alley, which made me experience the alleyway as strikingly different and illusory, became explicitly meaningful in terms of judgements of distance. I made sense of the strangeness of the alley by experiencing it as having a different length than the street. In all likelihood, on my initial encounter with the alleyway I carried over the sort of pre-objective body schema of going-through that is appropriate to the street. Communicating 'the body schema of going through streets' to the alleyway—constituting the world through an involvement that pre-objectively organises the world around limbs and sensory surfaces that are united in anticipation of the sort of involvement with the world that would be played out in motor-perceptual activity conducted in the street—meant that for me the alley was constituted as objectively shorter than the street to which it ran parallel.

We find a similar interrelation between distances along streetscapes and our attitudinal involvements with streetscapes. The flaneur dawdles and savours each articulation of the cityscape, so each variation in surface manifests a possibility of involvement that enriches the distance between two points. On the other hand, for the person late for an appointment the articulations of the cityscape between two points

vanish into the going that connects one point to another by the most direct route, and articulations of the cityscape—people and places—that she must be involved with in order to travel through the cityscape become points of frustrated involvement that lengthen the travel between point and point. Similarly, for the motorist or cyclist the distance between points in the city takes on a different meaning in virtue of the fact that motoring and cycling prevent a detailed involvement with life on the street. On the other hand, seeing a familiar and welcoming face amidst people on the street can close down distances. When streets are closed to traffic for a festival or parade and we walk down the middle of the street from stall to stall, or amidst paraders, distance along the street takes on yet another form. I am not trying to suggest here that ‘travel time’ be equated with distance. We do not *think* that distances are metrically shorter when we are in a car; rather, distances count in a different way in virtue of the way that we are involved with them. Our pre-objective attitude toward the street sets up an involvement with the street that expresses its meaning through motor-perceptual relations that are indeed played out over time, but the significance of this pre-objective attitude is not in the amount of time taken to move through the street, but in the manner of going-through that the street presents to our embodiment. The flaneur’s embodiment lets her become involved with the articulations of the street; the embodiment of the person late for the appointment ignores these articulations; for the motorist driving past, these articulations cannot and do not become explicitly manifest since the car that is integrated into her embodiment as a life-organ of going-through closes off such involvement; the appearance of a friend renders the street intimate; during the festival the street presents new and unfamiliar points of involvement that extend the articulation of the street for a ‘festive’ embodiment that is

not really concerned with going anywhere in particular—and the alleyway presents a different sort of possibility of involvement to our embodiment. Here we should also recall the case of I.W., who has no sensation of his own body, and for whom in consequence every attempt to go through a place is a draining intellectual exercise—a “daily marathon”—since it demands explicit attention to the sorts of articulations that would, in the absence of I.W.’s pathology, carry our embodiment through places in virtue of our body schema; we can only imagine the sort of meaning that distances would thus have in I.W.’s life.⁴³

In the context of the above analyses of spatial perception, these phenomena suggest the following to me. In virtue of our body schema and the possibilities given to our lived body by the world around us, our perception of distance is a perceptual co-synthesis of ourselves and the world in which we constitute the world as a determinate world-instrument of going-through that is continuously blended with our lived body, which we constitute as possessing determinate life-organs of going-through. This would, if put into more detail, describe a topology of going-through.

Notice what this sort of conception does. The street and alley as world-instruments of going-through become internal to the topology of going-through. We do not recover representations of the physical structure of the street from cues presented by its physical structure. Given our body schema, our pre-objective attitude toward the street shapes our motor-perceptual relation to the street (and this in relation to the possibilities that the street presents to our lived body); we thus constitute the street as a world-instrument of going-through that is internal to our topology of going-through. In the street as world-

⁴³ See Cole 1995.

instrument of going-through, the determinate features that would be called cues in a cue-dimensional account intrinsically motivate determinate meanings for our going-through, in light of which the street takes on determinate meanings with respect to distance. These meanings determine our constitution of the depth dimension that we perceive as distance along the street. In contrast, cue-dimensional accounts say that cues cause us to recover information about a depth dimension that is constituted on its own in a structure that is external to our being in the world. By pursuing Merleau-Ponty's 'anti-causal' understanding of perceptual phenomena, his concept of motivation, we have once again reversed the order of explanation that we find in traditional accounts: it is not because we see the street or alley as being in depth that we see it as a place to go through; rather, it is in virtue of our pre-objective anticipation of constituting street-like situations as world-instruments of going-through that we constitute them as having such and such a depth and distance dimension.

Let me sharpen my point by contrasting this anti-causal account with a Gibsonian understanding of such phenomena. In the Gibsonian understanding, the physical structure of our acting body within the information structure of the street causes the street to present a certain sort of affordance for our motor-perceptual activity, which affordance 'directly' contains information about distance. In the 'anti-causal' account we raise the causal structure of affordances to the *intentional* level: it is the pre-objective motor-perceptual intentionality of our lived body that motivates our constitution of the street as world-instrument of going-through, and this shapes the motives for distance perception that are given to us in the phenomenal field. The causal structure of information in the Gibsonian account is internalised within the pre-objective relation between our lived body

and the world. We cannot import causal relations and information structures into perception: we have to recognise that our habits shape this 'information' as motivating 'signs' that already have meaning internal to our perceptual embodiment. This is not to say that the causal structure of would-be 'cues' does nothing for our perception and that we should throw away all the careful work done by psychologists, which shows how cues can lead back through causal structures to information about external determinacies. In fact these cues and causal structures can determine perception in cases where we abstract from lived perceptual experience, for example, in the placeless place of the laboratory. Gibson's important criticism of this sort of abstraction is his recognition that perception is not played out in the laboratory. He sought to uncover cognate explanatory patterns beneath daily perception, by showing how the complex structure of sensory information interrelates with the motor-perceptual structure of our body, so as to already make complex information about the world 'directly' available to perception, without our having to build up this information from sensation. But Gibson makes the leap from the fact that this perceptual information is *available* in the biological body's interrelation with the world, and from the defensible position that such causal structures of information may be *necessary* in some way to perception, to the claim that these causal structures of information are *sufficient* for perception, that is, to the claim that perception is reducible to or identical with the direct pick up of such information from the environment.

But we are 'no more' constrained to see the street or alley in a certain way determined by information available to the organic instruments of perception than we are constrained to experience a missing limb as missing. The subject of perception is the

lived body whose body schema invests the facts of the body with a meaning, not an organic body that on Gibson's argument makes perceptual information directly available in the causal structure of the body-environment interrelation.

The claim in the beginning of the above paragraph is deliberately hyperbolic, and we have to realise that we are indeed constrained to see the alley or street in a certain way. Merleau-Ponty's point in his analysis of the phantom limb and the body is not to show that we transcend our bodies absolutely, but that our embodiment is a transcending rooted in a body and world that hold sway over us—we do not transcend our bodies through thought, but through habits, through the anticipatory momentum of our bodily existence. Severing a nerve can remove the phantom limb, and in the natural attitude of perception we cannot force ourselves to see through the illusoriness of an illusion—we cannot see the Müller-Lyers arrows as being the same length without transforming the perceptual situation; we cannot see the street as having no depth unless we take up a painterly attitude which abstracts from our involvement with the street as a world-instrument of going-through (but this in turn makes us aware of how our bodies relate to depth); we cannot see the *trompe l'oeil* archway as a painting until we stop pre-objectively constituting it as a world-instrument of going through.

So while I think it is right and important to suggest that we see situations such as streetscapes as having depth and distance in virtue of our body schema being such that we pre-objectively constitute these situations as world-instruments of going-through, we still have to ask why it is compelling for our embodiment to constitute these situations in this way. In the case of Lackner's experiment we saw that the meaning of the co-constitution of the oriented perceiver and perceived is determined by the body's perceptual relation to

itself and its situation; this relation is shaped by the body schema; and the shaping of the body schema is motivated by a topology of the body that already gives our power of implacement an articulate role within our embodiment. There is a pre-personal meaning to implacement that is given in the topology of the upright body in place, and our perceptual embodiment expresses concern for this meaning. We have to discover a similar pre-personal meaning and concern for going-through. To do so we have to turn away from the personal world of experience in which we experience ourselves as explicitly intending embodied beings, to a level in which we discover meanings already at play within facts of the body.

I have already noted that it is easier to get beyond the acquisitions of orientation than it is to get beyond the acquisitions of depth. But depth seems to belong to the very grounds of our embodiment, it is intrinsic to the distinction between the perceiver and the perceived; our very bodies are *of* space and this means that we are beings of and in depth. Depth is therefore so 'pervasive' that it is difficult to isolate it from the fact of our embodiment. On the one hand, this means that empirical evidence about our relation to depth is very tentative; but on the other hand, it means that we can make more suggestive and broader claims about the interrelation between embodiment and depth, just because this relation is so pervasive.

Let me first suggest some empirical evidence. Gogel discovered that in the absence of any context, objects monocularly presented in darkness are experienced as being at a distance of two to four meters (specific distance tendency); Owens and Liebowitz discovered that in the absence of a stimulus, in darkness the eyes tend to converge at roughly the same distance as in the specific distance tendency (dark focus

accommodation); and Gogel discovered that observers tend to perceive an object of an unknown distance as being at the same distance as a neighbouring object (equidistance tendency).⁴⁴ Researchers have also discovered a related phenomenon of binocular vision called the size-distance paradox. Described from the third-person point of view the paradox is as follows: in experimental situations, when the angular size of the object is held constant while the object is brought closer to the subject, the increase in binocular convergence of the eyes is accompanied by a shrinkage in perceived size, and “it is as if this decrease in size is interpreted as an increase in distance, completely overriding any direct effect convergence might have on distance perception.”⁴⁵ In other words, in the experimental situation a growing object moving toward the perceiver is perceived as a shrinking object moving away from the perceiver. Each of these phenomena suggests that in certain situations when size and distance are ambiguous, we privilege a fixity of distance rather than a fixity of size, and in this respect I find the determinate structure of these tendencies quite suggestive as well: equidistance tendency puts objects side by side at a distance from our bodies and specific distance tendency and dark focus accommodation put objects in a zone between one or two body lengths away from us. The size-distance paradox could also be resolved if we reverse the causal order of explanation and interpret it thus: in the absence of a definite object, and in particular when the indefiniteness of the object is changing, we tend to be concerned with specifying the object’s distance from us rather than specifying its size. These phenomena show that we

⁴⁴ Gillam 1995, 33-34; Gogel 1965.

⁴⁵ Gillam 1995, 28-29.

tend to fixate on distance rather than size in certain ambiguous situations, and that our fixation takes the form of a “holding off” of the object.

A related emphasis on distance is to be found in an illusion briefly noted in Hammersley’s “Things are deeper than they are wide: a strange error of distance estimation.” Hammersley reports the following experience:

There was a room the door of which had a coat hook on the back. The door was in the corner of the room and on the wall at right angles to the door’s wall was a rubber stop intended to prevent the hook from marking the wall. When the door was shut, facing the rubber stop, it looked as if the stop was misplaced relative to the coat hook. The coat hook looked further from the corner than the stop. Actually they were equidistant. (Hammersley, 1983, 589)

Hammersley ‘replicated’ the phenomenon using a model in which joined file cards played the role of walls, and dots played the role of hook and stop. He tested four groups of eighteen subjects on their ability to judge the distance of the dots from the corner, with different test conditions for each group. One group was asked to position a dot on a card along their line of sight at the same distance from the corner as a given dot on a card facing them; subjects in this group positioned the dot closer to the corner than the given dot on the card facing them. Conversely, another group was asked to position a dot on a card facing them at the same distance from the corner as a given dot on a card along their line of sight; subjects in this group positioned the dot farther from the corner than the given dot on the card along their line of sight. The ‘error’ in these two groups was in the order of thirty percent. There was little ‘error’ in the other two groups, who were presented with file cards side by side, and were asked to position a dot on a card on their left at the same distance from the ‘corner’ as a given dot on a card on their right (or vice

versa).⁴⁶ Hammersley claims and briefly argues that this phenomenon could not be accounted for by any current perceptual theory. It would be desirable to investigate these phenomena in more detail. (The sort of distance estimation that Hammersley reports in his experience of the room is different than the sort of distance estimation tested in his experiment, and the experience of the room is obviously different than the experience of the model, so I consider these two different but related phenomena; and Hammersley's experiment seems rather weak.) But Hammersley's data and our own experience of the phenomenon he describes show us another situation in which we place emphasis on depth, in this case by 'overestimating' it. Hammersley considers this overestimation an error—when we are in a room the door itself shows us that the stop and hook are at the same distance from the corner, so we are wrong to see otherwise. But we have to realise that moving doors around involves us with distances that belong to things, while seeing involves us with distances internal to our perception. We should not conceive this phenomenon as an error, but let it show us something about the way that we constitute dimensions. What it tells us is that in certain perceptual involvements with the world, things are in fact deeper than they are wide. I will call this phenomenon the "deepness illusion."

The equidistance tendency, specific distance tendency, dark focus accommodation and the size-distance paradox suggest that at a pre-personal perceptual level depth manifests itself as being intrinsically different than height and width: in certain lived situations where perceptual ambiguities arise, our perception seems to constitute our

⁴⁶ Subjects who had to position a dot on a card facing them on their left at the same distance from the join as a dot on a card facing them on their right (i.e., where the wall is 'flattened out') made little error, and

relation to a thing by 'holding it off,' through increasing or establishing distance between ourselves and the thing. The deepness illusion suggests that in our constitution of our spatial surround, depth and width do not necessarily have equal weight, they possess different sorts of 'metrics,' although here I do not want to reduce such metrics to quantitative structures. Heelan has tried to account for many phenomena of spatial perception by arguing that the geometry of perceived space is hyperbolic rather than Euclidean/Cartesian.⁴⁷ This attempt to put the determinacy of phenomena into metrical relations between axes of space is intriguing and adds to our understanding of spatial perception, but in Heelan's conception the relation between the geometry of space and our being in the world in motor-perceptual activity is not clear, so it would not be sufficient on its own to account for the sort of lived perceptual experience that I have been describing. The above experimental data suggest instead that space as we experience it has a 'lived geometry' in which the depth that separates us from objects plays an essentially different role in the meaningful constitution of our situation than do other 'dimensions' of space. The claim that space as we experience it has a 'lived geometry' is supported by Casey's analysis of the dimensions of the body, and we have also seen this in the study of depth in chapter two.⁴⁸

The above evidence and analysis, then, suggest that distance is a dimension that we shape by going-through and in which we hold things off. Distance, we might say, is shaped by a topology of going-through and holding-off, in which topology going-through and holding-off appear as a perceptual concern. In the other topologies discussed above,

the same held for subjects in when the task was left-right reversed.

⁴⁷ Heelan 1983.

we have seen that the topology is motivated by certain facts of the natural body. What facts might motivate the topology I have just described? I will venture some suggestions below.

In the theory of perception discussed in chapter two, our lived body distinguishes itself through motor-perceptual syntheses that synthesise the body and the world at once. This suggests that a topology of 'bounding' and separation (what might be called *écart* in *The Visible and the Invisible*) is primordial to human being. This would make depth an intrinsic issue for us, since bounding occurs in depth: our flesh is flesh in depth. Thus we could say that **human being is a being whose very embodiment puts depth into question.** The phenomena of sexuality and exposure mentioned in passing, and the discussion of the topology of uprightness as one that puts our relation to place in question at a pre-objective perceptual level, suggest that this questioning in depth could issue for us at a level of a perceptual self-awareness and concern.⁴⁹ Here the whole tradition of phenomenological-existential analysis of intersubjective relations, from Hegel's dialectic of recognition, through Sartre and Merleau-Ponty, enters into the discussion. In the case of Merleau-Ponty, we should particularly refer to his discussion of sexuality in the *Phenomenology of Perception* and his discussion of the child's development of an understanding of the ownness of her body through her interrelation with others (in "The Child's Relation with Others"); and we should also refer to recent literature that discusses the child's development of bodily awareness through interactions with others and the world.⁵⁰ To the

⁴⁸ Casey 1993, chap. 4.

⁴⁹ See the discussions on pages 276 ff and 237 ff above.

⁵⁰ I will mention some of this literature in the conclusion.

extent that we are beings *of* depth, and that for us finitude within depth issues into a metaphysical concern with our embodiment as an embodiment that is limited through the sustenance and denial given us by other embodied perceivers (as Merleau-Ponty might put it in his formulation of the metaphysical significance of sexuality⁵¹), depth is both pre-personally at issue in our embodiment, and is at issue as a question posed by an embodiment that is aware of and concerned with itself at a perceptual level.

Thus the fact that our body is finite and bounded could motivate a perceptual self-awareness and concern with depth. I believe that the experimental data noted above are pre-personal expressions of this concern. Can we get from this fact of our body to a power of going-through?

Here it is crucial that the issue of our boundedness is symmetrical and visible: the bounds that separate us from things and others are bounds that separate others from us, and that make us visible to others. This is expressed in Sartre's analysis of the look. Concern for the depths of our body is at once concern for the depths from which it can be seen—and here Hegel and Merleau-Ponty make the crucial argument that it is also concern for the depths of the other's body. Our embodiment not only puts our embodiment into question, but it is intrinsically a question to and a questioning of the depths of the world around us as containing other beings in depth. We must of necessity, on many different levels, from nutrition to sociality and speech, to the fulfilment of ourselves as cognising beings, put our embodiment into question through its interrelation with other beings in depth. But for us to do so, our being distinct from others must go outside the immediacy of just being distinct. Our being must deal with the topology of the

⁵¹ Cf. *PdIP* "The Body in its Sexual Being," esp. *PdIP* 194-95, *PP* 166-168.

lived body in its place, through which alone we can be distinct from others, and this possibility of dealing with our topology and with others is certainly founded on the motility that is intrinsic to our human embodiment. Here I do not want to reduce motility to an organic determination, because for human beings the motility afforded us by prostheses, vehicles and other technologies is crucial; even more crucial is the fact that we can bring it about that the world moves toward us; and even more crucial than that is the fact that other people move toward us and move through depth on our behalf, especially in the helplessness of our infancy; and most crucial is that the sexual dimension of our being marks an openness to others in which we move toward others as other. The 'transcendental existential' demand that we be distinct emerges as a demand for a power of relating to others through the body in place, and this makes it necessary that we have a power of going-through the world. This power would be intrinsically blended with a power of holding-off, since our power of remaining distinct through our relations with others and with things, like all powers, is a being-with that which our power relates us to.

I do not want to belabour the conceptual argument—on this point I would refer to discussions by Aristotle, Merleau-Ponty, Heidegger, Hegel and others.⁵² What I want to point out is that the fact of our finitude issues into a perceptual self-awareness and concern through which the question of depth is posed for us in our embodiment. This

⁵² Cf. Aristotle's *On the Soul* III·12-13 and *On the Motion of Animals* in relation to his discussion of growth and generation in *On the Soul* II·4 and *On Coming to Be and Passing Away* I·5; Merleau-Ponty's "The Spatiality of the Body Itself, and Motility" in *PdIP*; and Heidegger's analysis of the world and extension in *Being and Time* as well as his discussion of dimensions and stretch in his exegesis of Aristotle on time and motion in *Basic Problems of Phenomenology*; and Hegel on desire and recognition in *The Phenomenology of Spirit* (see Russon 1996 on this issue). For a Marxist materialist treatment of the way

perceptual concern would permeate the topology of going-through and holding-off into which it issues. Even if the experimental evidence for the details of such a topology is wanting, we should expect and conceive that our lived body manifests a perceptual self-awareness and concern in its relation to depth, and this is certainly very apparent in the alley illusion and the associated phenomena of seeing a street in depth. We should expect that the perceiver's motor-perceptual relation to her own lived body through her relation to others will shape the perceiver's sense of distance.

The topology of going-through and holding-off, which relates the lived body to others through a shared place in which we are with one another, and which thus becomes a world-instrument that does not belong to us individually but collectively, would motivate a meaning of the basic self-moving activities through which the lived body relates to others around it. This would be made explicit in the body schema's communication of a sense of distance to the world. This meaning would in turn motivate further acquisitions of the body schema, and these acquisitions would be motivated by the lived body's perceptual self-awareness of and concern with itself in relation to others. This developing topology, then, would invest distance with meaning, and here again we have overcome the cue-dimensional model, since the meaning of dimensions is motivated by a topology of the body. It is important to note that in all likelihood the topologies and the facts that I have described are not distinct from one another, so that all the topologies described above, in being open to developments of the body schema in a human world, blend social meanings into the topology of the body in place, and thence into the body's sense of space.

that the production of our finitude and bounding might issue into spatial structures, see Lefebvre, 1991, esp.



In the section of the *Phenomenology* entitled “The theory of the body is already a theory of perception,” Merleau-Ponty writes that “The thing, and the world, are given to me along with the parts of my body, not by any ‘natural geometry’, but in a living connection comparable, or rather identical, with that existing between the parts of my body itself.”⁵³

In this chapter and the last we have seen how space too is given not by a ‘natural geometry,’ but according to a ‘lived geometry,’ which I have conceived as a topology of the lived body.

Certain basic facts about our bodies and the interrelation of their parts in perceptual activity motivate meanings within perceptual life. These meanings become explicit in the body schema insofar as they figure within our anticipatory relation to the world. These meanings thus shape motivational relations within the phenomenal field, and thus communicate a spatial sense to the perceived world and body: for example, tilting the head down motivates a feeling of concern for our roots in the world, and this posture thus expresses a concern that colours or constitutes our sense of “up.” This meaning specifies a topology of the body in the sense that the meaning depends on topological relations between parts of the lived body in relation to the world, and these relations give a *logos* of the body as our *topos* of being in the world. But this meaningfulness is shaped by the pre-objective anticipatoriness of the body schema; so the basic meaning of the topology can motivate the acquisition of habits that rearrange and enrich the body schema, thus changing the meaning of the topology. The topologies that have been described all

the beginning of chap. 3.

⁵³ *PdIP* 237, *PP* 205.

incorporate the larger place that holds the body, into the topology of the lived body, *qua* world-instruments of the body. And I have also suggested how other embodied perceivers are intrinsic to this topology.

In each of these topologies, then, a motivating fact of the body is subsumed by habit within a sphere of motor-perceptual intentionality, and this motivates the system of meaning that is the phenomenal field. Let me describe the topologies that we have encountered in terms of motivating facts of body. (1) As we saw in chapter two, the fact that parts of the body are spread out in space but envelop one another in our act of unifying things, motivates a topology of a bodily space, whose measure is given in primordial depth. (2) The distinctness of things from our body is given through a motor-perceptual relation that at once distinguishes us from things and connects us with them within a larger place that holds us and things. Our perception of things as distinct from us depends on this fact. As we have seen in chapter two, this fact motivates what I have called a topology of grasping. This topology places things in depth; and according to Merleau-Ponty's analysis, it constitutes a spatial level of orientation. (3) Our bodies can stand upright against the earth *qua* world-instrument of implacement. It is intrinsic to the standing body that what is behind vanishes from sight and from the hands (although is still present to smell and hearing and other touch organs); yet the head and neck give us an active visual relation to what is in front and below, and thus allow us to thematise our embodied relation to the power that implaces us, or neglect it, or show concern for it, or assume it, and so on. Our visual relation to things depends on this fact, and as we have seen, this fact motivates a topology of uprightness. (4) Our bodies are bounded beings in the world that distinguish themselves from others and from things, yet are dependent on

others and things within a larger place that holds us. This means that our changing relations to others and things are of concern to us in our very perceptual being. This boundedness and our concern for it is not merely individual, but is apparent in the very appearance of our embodiment. This concern, for example, is apparent in the sexual dimension of our being, which Merleau-Ponty invests with metaphysical significance. I have suggested that this fact of the boundedness of the body contributes to the motivation of a topology of going-through and holding-off. The significance of each of the facts that I have described is not confined to the topologies that they motivate, and we should expect that these topologies permeate one another within the body schema that subsumes the natural body under habits, in virtue of which schema we anticipate a world that is shaped according to these topologies of the lived body.

I have, then, specified a “lived geometry” of the body in place, which “lived geometry” is sustained in the body schema, as a topology of the lived body in relation to place. Given the theory of perception that I discussed in chapter two in connection with the theory of the body schema, we can see how this topology of the lived body would be communicated to the world in motor-perceptual activity. (The study of depth perception in chapter two showed this in some detail.)

If, then, as we have seen to be the case, the body is not a transparent object, and is not presented to us in virtue of the law of its constitution, as the circle is to the geometer, if it is an expressive unity which we can learn to know only by actively taking it up, this structure will communicate itself to the sensible world [*va se communiquer au monde sensible*]. The theory of the body schema is, implicitly, a theory of perception. (*PdIP* 239, *PP* 206)

The expressive unity of the body has a rich, living topology, not a mathematically specified geometry, and we communicate this to the world in perception. We are not like plants, with our heads stuck in an earth that serves us as stomach. Here the *Timaeus* is

very rich in suggestions: “the most sovereign part of our soul” “resides in the top part of our bodies,” separated from the body by a neck that serves as an “isthmus” bounding the head from the chest; it is this part of the soul that “raises us up away from the earth and toward what is akin to us in heaven, as though we are plants grown not from the earth but from heaven.... For it is from heaven, the place from which our souls were originally born, that the divine part suspends our head, that is, our root, and so keeps our whole body upright.”⁵⁴ To transport this into my phenomenological discussion, there is a complex play of meanings between our motor-perceptual organs and the dimensions and articulations of the body, and for us the body and earth are not merely natural organs but a source of our concern, and a source that opens us even at the perceptual level to other concerned beings. This concern and connection to others is already at work in our perceptual awareness of ourselves, and this shapes the topology of the lived body. This becomes particularly clear when we realise that the topology of our lived body develops through the body schema, and that our development from infancy is shaped by the built world that surrounds us, and by the gestures, expressions, movements and perceptions of the entourage of people who sustain and deny us in our growth. The topology of our relations with others shapes the topology of our relations toward others and the world, and communicates a sense of space to the world.

We sense space, then, through the topology of our lived body in place; and our sense of space thus depends on the fact that our world is a human world and our place a human place.

⁵⁴ Plato, *Timaeus*, 69e and 90a, translation slightly modified from Zeyl on the basis of Jowett’s translation.

Conclusion

We are with one another in space. That is, our being with one another is insuperably a sensing of one another's spatiality and a sensing of the spatiality of the things, organisms and constructions in the world that we share. To sense one another's spatiality and the spatiality of the world is to perceive this spatiality, to give it a meaning, and to fit a spatial world around us so as to fit within this world. The space in which we live with one another has a *sens*.¹ This *sens*, as Merleau-Ponty has shown, is shaped by the manner in which our lived bodies anticipate a sensible world. It is constitutive of our lived bodies that we shape the web of relations and possibilities given in the body—the interrelation of its parts, our relation to place, our relation to ourselves and our relation to each other—into a habit of spatial being in the world. This habit senses space around us. We are not in perceived space as a thing is in a container. Our lived bodies are *of* space: perceived space is our habit, it is, as it were, an essential garment of our being in the world, which garment is incorporated as a basic habit of the motor-perceptual-intentional life of the body.² The emperor may doff his clothes, but from the start every child is garbed in space that cannot be shed.

¹ See my discussion, in the introduction, of the multiple meanings of the French word *sens*.

² Cf. Casey's (1993, 103) metaphor, in which he construes the interweaving of body and place as a "single garment"; I mean to suggest that such a garment would be a habit whose threads are the possibilities of the body, and whose weave and design are given in the body schema.

Following Merleau-Ponty, I have argued that our lived body anticipates a sensible world in virtue of the body schema, which, I claim, is a primordial habit of the body. According to Merleau-Ponty, perception is a motor-perceptual activity shaped by the body schema, and this means that the body schema communicates itself to the world in perception, giving the world a sense. “The theory of the body schema is, implicitly a theory of perception.”³ In Lingis’s beautiful description, “To recognize a lemon is not to conceive the idea of a lemon on the occasion of certain sensory impressions; it is to know how to approach such a thing, how to handle it, so that its distinctive way of filling and bulging out space, its distinctive way of concentrating colour and density and sourness there becomes clear and distinct.”⁴ It is the pre-objective anticipatoriness of the body schema, not our mind or a mechanical-neurological process, that give us a handle on things.

Within the lived body and its schema, there are webs of relations that communicate a sense to specific dimensions of perceived space, for example, depth and orientation. I have conceived such webs as topologies of the lived body, and made an effort to distinguish them and demonstrate their interaction with our sense of space. In chapter two, I described a topology of bodily space that gives sense to primordial depth, and a topology of grasping that gives sense to objective depth in cases where we deal with things. Such a topology of grasping is also described in Merleau-Ponty’s analysis of depth and orientation perception. In chapter three, I described a topology of uprightness that gives sense to orientation in weightless conditions, and that very likely colours our sense

³ *PdIP* 239, *PP* 206.

of orientation in earthly conditions; I also made some suggestions about a topology of going-through and holding-off that could give sense to perception of distance (that is, depth *qua* belonging to a place). Together, these topologies, which would permeate one another, specify a topology of the lived body, which communicates a spatial sense to the world.

One could think that the body schema and the topology of the body are purely for-themselves. One could think, for example, that they play a role in some way equivalent to a Kantian pure *a priori* intuition of space, together with a schema for its application. In this case my account of spatial perception would specify an idealism of the body, or a version of empiricism in which association (which always ends up being an idealising system that is dogmatically asserted) takes place in the body rather than mind. This would return us to the sort of cue-dimensional model that I criticised in chapter one. Suppose that the body schema and the topology of the lived body are purely for-themselves, yet let us get in touch with others. Then the body schema and the topology of the lived body would each have an internally unified identity, yet they would also connect us with dimensions that are beyond us and that also belong to others. In this case the body schema and the topology of the lived body would connect us to others only in virtue of an outside or transcendental dimension—what Merleau-Ponty would call a ready made world. The body schema and the topology of the lived body would then amount to systems for recovering dimensions from cues.⁵

⁴ Lingis 1996, 55.

⁵ A full analysis of this issue and the claims that follow would require an epistemological-ontological study that is outside the scope of this work. In the context of Merleau-Ponty, this study would have to focus

Throughout this work, though, I have shown that the body schema and the topology of the lived body are neither purely for-themselves or purely in-themselves. The body schema is a primordial habit, which is to say that it cannot be reduced to a being-in-itself or a being-for-itself: the body schema is pre-objective and anticipatory, it is the kernel of our power of being in the world. The body schema is a *principle of the body*: without the body there would be no body schema, and without the body schema there would be no body as we live it. This unity of the body and its life is manifest in the claim that the determinations of the body schema and the topology of the lived body are *motivated* by facts about the body. Moreover, the body schema is a *primordial* habit that *develops* over time. Facts about the body do not immediately motivate the shaping of the body schema, but do so in a development that unfolds within the contingencies of the perceiver's history and situation, and within a lived body that always already has a momentum that anticipates a world. So the body schema is always already mediated by facts about the body, and is mediated by the perceiver's history and situation; on the other hand, facts about the body are always already subsumed under habits in virtue of which the perceiver is a being in the world who shapes her developments in relation to her situation and past. To put it simply, facts of the body already have meanings that are manifest in our motor-perceptual activity, which is an activity of being in a human world; yet our history in the human world can reshape these meanings through the acquisition of habits that rearrange the body schema.

The theory of the body schema and perception thus escapes the charge that it institutes a new version of an intellectualism or an empiricism. It escapes this charge

on Merleau-Ponty's difficult claims about the *a priori*, *a posteriori* and synthesis that are scattered

because the body schema is a principle of embodiment, which embodiment is at once our carnal locus of being in the world, and our process of living amongst each other as individuals who work to free themselves with respect to one another. The body schema is a principle of a process rooted in carnal being, but is not reducible to physiological determinations: the carnal being in question is an anticipatory being in the world, a mortal, finite being for whom being and carnality are in question in both perception and cognition, in one's own life in the eyes of others.

The topology of the lived body thus also escapes the above charge, and in uncovering this topology we have added another layer to the account of the “entirely different kind of synthesis” of space, a non-ideal, non-Kantian synthesis of spatial perception, which Merleau-Ponty calls for in the *Phenomenology*.⁶ This new kind of synthesis is a motor-perceptual synthesis whose schema is given in the habits of the lived body. It is a synthesis in which the lived body *qua* being a being that is intrinsically *of* space, senses space around itself in its very activity of synthesising itself, things and others as having meaning for the embodied perceiver. We occupy a place amidst things and others through a lived body whose habits always already embody a pre-objective, perceptual awareness of and concern for our relations to others and ourselves. We thus bestow constitutive meaning on the perceived space that we sense around ourselves. Here we have put essences back into existence: the syntheses that are constitutive of space are carried out by a lived body in a place amidst things and others, and these syntheses are motivated by facts about this being-in-place and the history of this being-in-place.

throughout *PdIP*, but stand out in the central portion of “Sense Experience.”

⁶ Cf. the first paragraph of “Space” in *PdIP*.

In sum, we sense space with our lived bodies, and the lived body's motor-perceptual synthesis of space is specified by a topology of the lived body, which topology is given in the body schema.⁷ Our sense of space then, is mediated by our body schema, and the body schema is a principle of embodiment that is motivated by facts of the body and by our history of being in a place amidst others. What does this tell us about how we are with one another in space?

In the chapters above, I focused on the way that facts of the body—that it is spread out, bounded, bound to others, visible, and so on—motivate the topology of the lived body. But I also showed that the body schema, which shapes the topology of the lived body, is a habit and is developmental. This showed how our sense of space can develop, be labile, and be susceptible of breakdowns. I would now like to show how my analysis of spatial perception and these concepts can serve as a propaedeutic or starting point for some suggestions about how spatial perception intertwines with our relations to others. My crucial initial observation is that since the body schema is developmental, it will 'absorb' our history of relations with others. That history and the perceptual interactions that make it up, enter into the mediating term of spatial perception, the body schema. Thus one's sense of space could, to some extent, reflect the meanings that one absorbs from the human world in which one develops. We are *of* space with one another.

The body schema and hence the topology of the lived body absorb our history of relation with others. It follows from this that continuing the account of spatial perception initiated above would require studies that move in several directions. One direction would

⁷ We could consider this topology to be a 'sub-habit' of the body schema *qua* primordial habit of being in the world, but this is not to suggest that this 'sub-habit' is a separate or distinct habit; it is only

be a study of the interrelation between individual histories and pathologies of spatial perception. The meanings that one absorbs from the human world in which one develops may be revealed when habits of spatial perception break down, when the pre-objective unity that one anticipates with one's body collapses and one tries to hang on to the sense of the world through approaches to the world that institute new motivations and thereby reveal the meaningful shape of prior motivations. Illness is, as Merleau-Ponty writes, a "complete form of existence,"⁸ and the onset of illness can reveal the form of existence that motivates life in health. Breakdowns of habit might stand as 'existential reductions' that reveal individual histories of the lived body, in the way that the violence of scientific experiments in the material discussed above revealed general histories of the lived body.⁹

In a broader direction, studies of cultural being could show how architecture, artwork, systems of ideas, political structures and so on, inform our sense of space. The account that I have given could serve as a propaedeutic to such studies, and would be enriched by existing studies of this sort. Of note are Casey's *Getting Back Into Place*, Deleuze and Guattari's *A Thousand Plateaus*, Lefebvre's *The Production of Space*, Bachelard's *The Poetics of Space*. And I think that Cassirer's *The Philosophy of Symbolic Forms*, Heelan's *Space-Perception and the Philosophy of Science* and Cataldi's *Emotion Depth and Flesh*, would also be important, as would Foucault's studies of the social ordering of the body, particularly *Discipline and Punish*, and Deleuze and Guattari's *Anti-*

conceptually distinct.

⁸ *PdIP* 125, *PP* 107.

⁹ See Goldstein 1995 for an excellent study of disruptions of behaviour in pathologies, which shows how these disruptions reveal the larger meanings that are vital to us, rather than being a breakdown of mechanisms. See Heaton 1968 for a study of visual disorders that aims to give a phenomenological-existential account of visual disorders. Heaton's study is in the tradition of R.D. Laing (compare Hoff and

Oedipus. This direction of research would find much of value in art-historical studies of spatiality, such as Panofsky's *Perspective as Symbolic Form*, as well as cultural-historical studies of ancient art. Finally, to my mind Hegel's *Phenomenology of Spirit* is a masterful guide to the ways in which the confluence of art, religion, philosophy, and facts of the body—desire—shape one another in the human world so as to establish topologies of recognition that give shared meaning to various levels of 'spiritual spacing,' and I believe that Hegel's *Phenomenology* would be indispensable to any such research. Russon's *The Self and Its Body in Hegel's Phenomenology* would be crucial to linking Hegel's study of spirit to a study of embodied perception. Hegel's *Aesthetics* would help in understanding how such topologies of recognition are retained, worked on and manifest through artworks. On this note Heidegger's "The Origin of the Work of Art" would be quite important as would "Building, Dwelling, Thinking." Here too we would need Marx, and Lefebvre's analysis is very rich in this respect.

In each case, such a study might be developed to show how cultural, social, technological, scientific, economic, linguistic, placial¹⁰, religious and artistic facts of the human world enter our embodiment through our development, and thus shape our sense of space. This could also show how shapings of our spatial sense in turn perpetuate understandings and shapings of the body. In turn this would show how, on a broad level, shared senses of space reflect shared senses of the body, and how the body that we share in this sense of space is not a creature of biology, but a creature whose schema is shaped by cultural and technological productions.

Potzl, 1988, who give a neurological account of similar disorders). Laing's studies of interpersonal relations would, I think, be very fruitful in pursuing this line of research.

To give but one example, Casey's analysis of Stefánsson's remarks about Inuit navigation shows that for Stefánsson (who is struck by the fact that his Inuit companion returns to camp not by following the shortest linear route from his destination back to camp, but by returning over the whole path of travel), distance is insuperably united with time, since for him lines are the shortest distance between two points. To sense space in the way that Stefánsson does is to have a lived body that (to elaborate on Casey's suggestions) belongs to a culture in which the body's tasks—its doing and being—are shaped by a need "for efficiency and especially for the meeting of deadlines."¹¹ In virtue of the anticipations of his lived body, the metric of space for Stefánsson (and here I shift into the language of Deleuze and Guattari) is striated by an abstracted demand of culture and technology that we carry with us every place, rather than being smoothed out in flows that are demanded by place itself.

But this move to the broad level of culture would be incomplete without a 'genetic' study that showed how our interaction with the human world during our development could in fact shape the body schema and hence the topology of the body. On this issue, the results of current research in developmental psychology, particularly studies influenced by ecological psychology and dynamic systems theory, are suggestive.¹² As Gallagher points out, there are several studies that show that absence of early crawling experience is correlated with negative effects on the development of spatial perception,

¹⁰ By placial facts, I mean facts that attach human values to certain places. "Placial" is Casey's word.

¹¹ Cf. Casey 1993, 25 ff.

¹² For a general discussion of these research programs, see the appendix of chapter one.

and Gallagher takes this as evidence of the existence of the body schema.¹³ In my account, this suggests that the infant's body schema anticipates crawling behaviour in virtue of the fact that the infant is perceptually involved with people and things that are *out of reach* of the actual body. But to perceive such things through a topology of grasping is for the lived body to already enclose a harmony that *tries* to put people and things *in reach*. Crawling and other motor-perceptual behaviour thus go hand in hand with perception of things in space, since the demand to move the body and put things in actual reach is intrinsic to perception. In other words, the topology of grasping that gives sense to others and things in depth is intrinsically a topology of bodily motion in a larger place that holds the infant together with others and things.

But it is crucial to note that crawling and walking in human infants is not a merely natural behaviour. Crawling and walking are not reducible to bio-kinetic or neurological determinations, and neither is reaching: we learn to reach in the hands of others; the larger place in which crawling occurs is a human place with an entourage of people who actively bring infants and things together; and other people and the things they do may motivate crawling, walking and reaching. An infant may be motivated into crawling by a

¹³ Cf. Gallagher 1995. For studies of this interrelation see Kravitz, Goldenburg and Neyhus 1978; McEwan, Dihoff, Brovisc 1991; Kermoian and Campos 1988; Bushnell and Boudreau 1993; von Hofsten 1986; von Hofsten and Rönqvist 1988; and also Butterworth and Hopkins 1988. (For the phenomenologist, these studies are problematic to varying degrees because of their quantitative methods.) For a more general theoretical account of the relation between exploration and perception in infants, within the tradition of ecological psychology and dynamic systems theory, see Eleanor Gibson's seminal article "Exploratory Behavior in the Development of Perceiving, Acting, and the Acquiring of Knowledge" (E. Gibson 1995). Also see Adolph, Eppler and E.J. Gibson 1994; Butterworth 1993; Butterworth 1989a; Kellman and von Hofsten 1993. For general discussions of the development of the infant's spatial perception, see Bremner 1989; and Kellman 1995.

Any study of the infant's relation to space and the development of spatial perception would be incomplete without reference to Piaget. See Piaget 1973, 1967 and 1960. For a survey and history of developmental conceptions of spatial perception, see Eliot 1987. See Wiggins 1979 for a discussion that links Piaget and Merleau-Ponty.

sibling who removes precisely those things that the infant wants to reach, or by a parent leaving the room.¹⁴

The social nature of the development of walking is suggested by studies that were prompted by the question of why neo-natal stepping disappears and then reappears. Neo-nates who are held above a surface will make walking-like steps (although they step with toes striking first, rather than with the heel, as is the case in fully developed walking). But this stepping behaviour disappears after a while, and then reappears with the development of walking. To account for this disappearance and reappearance, Thelen, who is guided by principles of ecological psychology and dynamic systems theory, has given a convincing and ingenious argument that the disappearance and reappearance are accounted for if we take the question to be about a developing infant whose body weight and relation to the environment changes with growth. In other words, the environment and the biological body are internal to one another, and this interacting, dynamic system shapes both the appearance and disappearance of stepping, as well as the rhythm and shape of steps in walking.¹⁵ But Zelazo's analysis of walking suggests that cultural factors are crucial to walking. For example, in Kenya where mothers as a matter of course play "Kitwalse" ("to make jump") with infants, and teach infants to sit, stand and walk, but do not believe that it is necessary to teach infants to crawl or roll over, eighty six percent of infants studied produced the stepping behaviour at every month from birth to one year.

¹⁴ See Meltzoff and Moore 1977 and Meltzoff and Moore 1995 for a discussion of studies that show that a very early age neo-nates and infants recognise other peoples bodies and gestures, and react to their leaving and returning.

¹⁵ On the development of walking, and the appearance and disappearance of stepping, see Thelen and Fisher 1982; Thelen 1984; Thelen and Smith 1994; and Thelen 1995; also see von Hofsten 1989, Butterworth 1989b and Bloch 1989.

(That is, the stepping behaviour did not disappear.)¹⁶ This gives an explicit demonstration that others and the goals and harmonies that they give us on our behalf are intrinsic to our learning to walk. To put it another way, the question “Why does walking behaviour appear, disappear and reappear in the infant?” is not a physiological/neurological question, but a cultural/bodily question. The question might not appear in the same way in Kenyan culture. The dynamic system that we study when asking questions about human motor-perceptual development is not: body-environment (the object of most ecological psychology and dynamic systems theory). Rather, it is: lived body-human world-others.

Similarly, Thelen and Smith’s important longitudinal studies of individual infants have shown how reaching behaviour in infants should be understood as a solution to a problem posed by the body-environment system, not as a pre-programmed neuro-motor system. But again, I think the questions that determine Thelen and Smith’s studies are of the wrong sort. We reach first of all for other people, and before that people reach for us; the touch and the caress are prior to our grasp of things. Subsequent to the touch of others, we reach for things that gain their unity within a human world in which others work to present things as already laden with a significance for us from the point of view of others—others present themselves and things so as to tantalise, fascinate and engage. More than that, as Fogel has argued, our ways of helping infants reach, and our shaping of

¹⁶ See Zelazo 1983. The results that I cite and the claims made about Kenyan culture are on page 111; Zelazo is reporting on a study by Super. Also see Zelazo 1984. To my mind, Thelen’s replies to Zelazo in Thelen 1983 and in Thelen and Smith 1994 do not do justice to Zelazo’s argument.

their grasp in ours (which Fogel calls “scaffolding”), are crucial to the infant’s learning to reach.¹⁷

(Here I would venture to suggest that the independence that we find when we perceive inanimate things depends from the independence that is demanded by the touch of the other and by our touching the others. Animals often have a marked indifference to the independence of things around them: things vanish in animal projects, whereas the world around us may be absorbed into projects, but still stands out as having its own identity. This is to say that our perceptual being in the world already embodies ethical demands.¹⁸ My suggestion is that this is in virtue of the fact that our first contacts—contacts with others—belong to an erotic domain that implicates an ethical domain.)

Suppose, then, that the infant’s spatial perception is shaped by the development of her motor-perceptual behaviour, and that the topology of the body that gives sense to space is a topology that develops through the infant’s motor-perceptual explorations. To place things in bodily space and in depth is to know how to approach them and to unite one’s body toward them. But on the above suggestions, crawling, walking and reaching, which are crucial to approaching things, are shaped by the way that the bodies of others interact with our bodies and work on the place that holds us. And the appearance of others in relation to the infant, and their almost theatrical presentation of the world to the infant, shapes the motives of the infant’s motor-perceptual activity. Others’s bodies in place shape our body in place, and others shape the motives that are placed around us. Others and their shaping of the ‘drama’ and setting of the infant’s world shape the motor-

¹⁷ Fogel 1993.

perceptual moment of the infant's developing topology, and thus shape the infant's sense of space.

The story that I have portrayed above is put in terms of the commonplaces of our Western culture, and is suffused with an idyllic tone. But we should realise that this story is equally one of violences, of things put out of reach, of relations that are closed down and cut off, of anticipations that are laden with fear, of indoctrination into values and ways of exploring that shape the world. Every buoying up of a possibility is the shrivelling of another. Thus, although this story is constrained by the overall possibilities of human being and world—by a primordial topology of the lived body—perhaps we will find evidence in development for particular shapings that belong to particular cultures and individual histories. It is for this reason that I would suggest that the interrelations of the lived body and space that we find at the cultural level grow out of patterns of development. But here we should note that our power of dilating our being in the world through habit is not an *a priori* of the species, and neither is it an *a priori* of our culture. Our habits belong to us *qua* individuals, and we have a freedom of transcending our cultural shapings, through reflections on our body, both in thought and in the poetics of bodily expression. Cézanne reshaped his perceptual space and that of his culture with eyes, hand and paint.

A 'genetic' study of spatial perception would, however, have to be based on a rigorous philosophical conception of our relations to others. Our scientific tradition, which asks us to quantify, objectify and abstract, leads psychology to ask the wrong questions, I think, and I have repeatedly criticised psychology and science throughout this

¹⁸ Cf. Russon 1994, and "Imperatives" in Lingis 1996.

work. We need a robust ontological conception of the child, others, and their relation, if we are to even to begin asking the right questions. For this I would first of all turn to Merleau-Ponty in the *Phenomenology of Perception* and in “The Child’s Relation with Others” (as well as “The Experience of Others”), but we would also need to turn to Freud, Klein, Lacan, Hegel and others.

But here we have entered a circle, which is to say that we have returned to our existence, to contingency laden with necessity. We are with one another in space. This is to say: we sense the spatiality of others. We sense space through the topology of our lived bodies, and the topology of our lived bodies is first of all motivated by primordial facts of the body. Our bodies are *of* space. Our sense of space is also shaped by cultural and individual histories, in virtue of the fact that the body schema is developmental and is thus shaped by our encounters with others. But for us to encounter others, we must already encounter them as spatial. We are *of* space with one another.

This means: others can shape our spatial perception only because we are already open to their spatiality, and this is to say that we are at work in spatial perception and are capable of a transcending within it. Our sense of space develops in virtue of the fact that our being in the world puts our spatiality into question for us at the level of perceptual concern, and this is the motive of the dialectical development of our sense of space.

This also means: our sense of space is equi-primordial with our being with others. We could not deduce the particularity of our sense of space in abstraction from our being with others, and we could not have our sense of being with others without our sense of space. Our being with others is reflective of our sense of space, and our sense of space is reflective of our being with others. These are two inseparable moments of one life and we

shall not find the one without the other. Our sense of space can tell us about our being with others because it compresses and condenses our individual and cultural history of being with others into a topology of the lived body that reflects our way of standing with one another in place. But we can only sense the meaning of our sense of space if we put essences back into existence; the study of our sense of space will not reveal a pure essence of our being with others. We must learn to sense how our sense of space reflects and reveals our way of being and standing with one another. To do so we must turn to the phenomena as they are given in existence.

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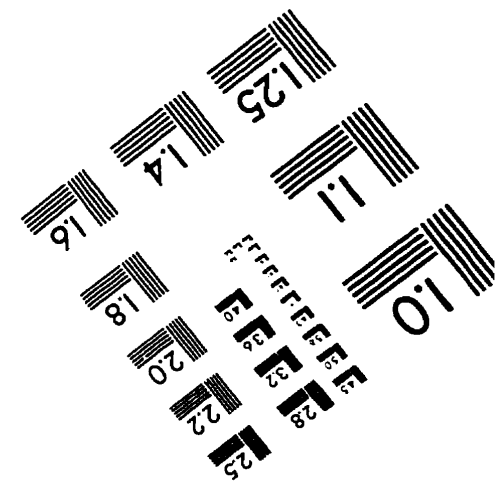
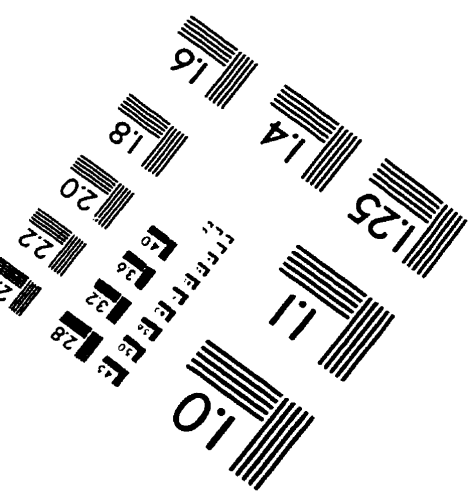
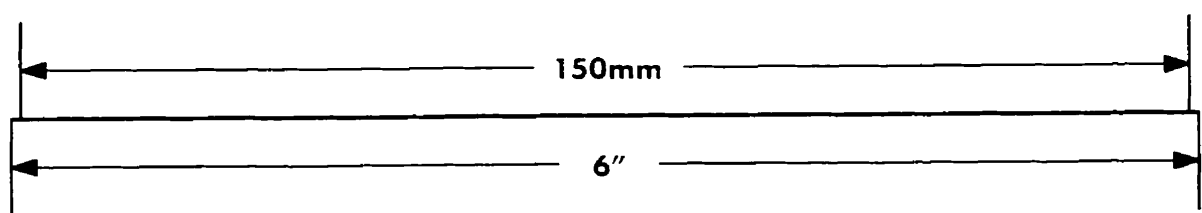
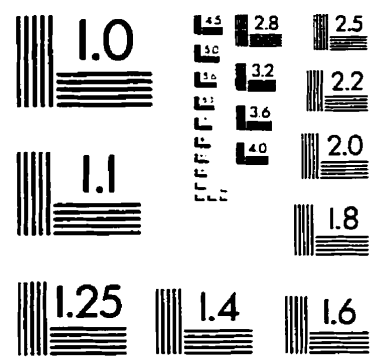
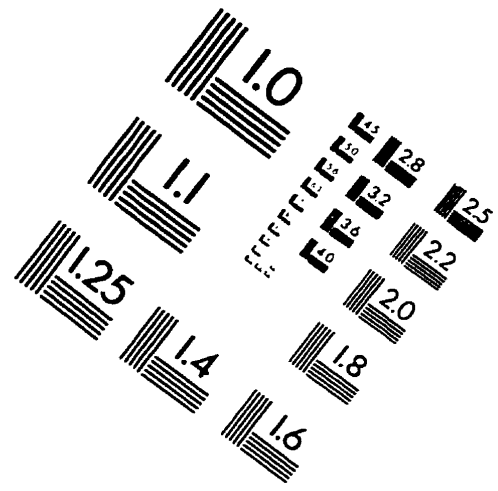
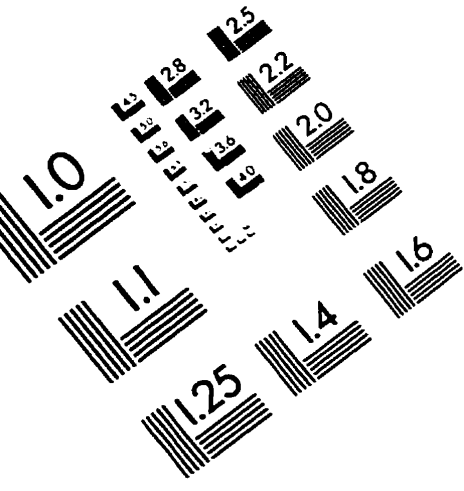
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