

Introducing Interdisciplinary Connections

Interdisciplinary Connections

Here I signpost interdisciplinary links. The more detailed clarification and explanation of concepts and themes will become clearer later on. The exploration of interdisciplinary connections will, hopefully, be of interest to the interdisciplinary fields relating to neuroscience, philosophy and cultural studies, but I shall aim to contribute specifically to the fields of psychosocial studies and relational psychoanalysis.

While making various disciplinary connections, it is impossible to do justice to each specialist field; being a Jack(y) of all trades and master of few makes it difficult to please each specialization. One's strength, it is hoped, is to be found in the *links* made *between* disciplines and in the opening up of the borders and the blurring of boundaries where possible.

It may at first appear odd to make links between such apparently different disciplines as philosophy, neuroscience, psychoanalysis and social and cultural studies, yet I would argue this is not the case. A relationship between the disciplines and their view of the body can be established, though this does not imply that the different approaches are always readily compatible. The aim of this book is to weave these distinctive fields into a creative exchange with one another in order to stimulate further debate and developments. It does not set out to claim definitive answers.

Philosophy is both a study of ontology (an understanding of the being of things) and a way of unpacking founding axioms. Philosophical investigation can be carried out on any discipline in order to identify and expose its founding assumptions.

Definitions of the body are frequently based on presuppositions that derive from philosophy and can be exposed as such. Mind/body divides have a basis in metaphysical thinking and such philosophical notions can be found in neuroscience in spite of scientific claims to the contrary. Likewise psychoanalysis and the social sciences can be influenced by dualistic divisions.

Dualism has dominated Western models of mind and body, and these models need to be challenged if a view of the body free of the dualist impasse is to be advanced. I shall look at the residual dualism in psychoanalysis. The main term to be introduced in Parts II and III is *propping*. This is a term coined by the French psychoanalyst Jean Laplanche and derived from the German word used by Freud, *Anlehnung*. Put simply, propping describes how the sexual drive and the more complex psychical representation of the body initially emerge out of the biological body processes, at first by leaning and finding support in, and then by deviating from, them. This results in a sexual drive 'proper' which is more closely linked to psychical/'mental' forms of representing the body. I explore how the term 'propping', despite being used as a border term to link body and psyche, does not in fact overcome dualism but resurrects the undissolvable divide.

The term 'propping' is important, as it also impacts on other important formulations, for example the work of the French psychoanalyst Didier Anzieu, who accounts for the emergence of the skin ego. Part III will be devoted to a discussion of his work and the skin envelope. The popularity of the propping concept as way of resolving the body/mind problem spread to social, cultural and film studies, so critical discussion of this term has relevance for these fields as well. I shall try to show up how dualism is a problem and how it can be worked through from within psychoanalytic thinking, drawing on interdisciplinary developments to support my argument.

In providing a preliminary overview of the context for writing the book, I have already introduced terms that may be unfamiliar and not yet adequately explicated. These are terms that describe interpersonal reality, like 'intersubjectivity' and 'intercorporeality'. Later I shall also refer to the 'mirror neurons'. These specialized neurons, it is claimed, provide a neurobiological basis for intercorporeality. I ask readers to bear with me: these concepts in their complexity will be explained as the argument unfolds.

For now suffice it to say that all such terms describe how the body, and even the biological processes, are bound to others. Mirroring and observing the actions of others is the way we learn about our own bodies. Furthermore it is through the other that biological processes and affective bodily experiences become patterned and structured. I explore how the interpersonal and social field is primary and profoundly influences the biological processes.

What is identified in this book is the emergent relational ontology regarding the body that cuts across the apparent disparate disciplines of philosophy, neuroscience, psychoanalysis and psychosocial and cultural studies. I have

referred to this interdisciplinary development as a paradigmatic shift, a Copernican turn for these disciplines, that has resulted in a move away from the view of a physical body cut off from the psyche and the world towards that of a bio-psychosocial body.

There is the twentieth-century turn that brought about the paradigmatic shift described above, which philosophical developments made possible. As early as 1917 the German philosopher Edmund Husserl identified *intersubjectivity*. This is taken up by the philosopher Martin Heidegger, whose book *Being and Time* (1927; Heidegger 1962) examines the interpersonal field and intersubjective being. Maurice Merleau-Ponty developed an understanding of bodily being as profoundly bound up with others, referring to intercorporeality in 'the child's relations with others' (1951; Merleau-Ponty 1964).

Since then Anglo-American and European researchers in developmental and cognitive psychology, psychoanalysts and neuroscientists have described and expanded upon relational models of the body. These different fields (including the philosophical) are in fact all connected in that they share the relational paradigmatic shift regarding the body.

In developmental psychology Colwyn Trevarthen (1978, 1979) is well known for importing the term 'intersubjectivity' from phenomenology and relating it to the early non-verbal bodily relation between infant and caretaker. Meltzoff and Moore (1977) refer to intercorporeal gestural mirroring in empirical research on infant–adult interaction.

Merleau-Ponty's observation of intercorporeality has profoundly influenced neuroscientists, the most well known being the Italian neuroscientists Rizzolatti, Gallese and Iacoboni, and led to the discovery of the mirror neurons (Rizzolatti *et al.* 1996; Gallese *et al.* 2004; Iacoboni 2005). It is claimed that the neurobiological basis of intercorporeal being is to be found in the functioning of the mirror neuron.

In French psychoanalysis Jacques Lacan (1977b) had already proposed the mirror phase in 1936 (published in English 1966), and Merleau-Ponty, who was sympathetic to psychoanalysis, took up Lacan and described how intercorporeal being is the basis for the body image (in French, 1951; Merleau-Ponty 1964). Later, from different traditions in psychoanalysis Anglo-Americans Atwood and Stolorow (1984) related intersubjectivity to the analytic relationship, and Schore (1994) linked neuroscience and attachment to explore the biological relational basis in the early attachment relationship. In British attachment theory and Anglo-American relational psychoanalysis, a focus on intercorporeal and intersubjective approaches has flourished.

Intercorporeal and relational models have likewise influenced psychosocial and cultural studies, notably through the work of Massumi (2002) and the rise of the 'affective turn', which, arguably, has brought affectivity and the body into the limelight of social analysis.

Between Skins charts the move from dualistic thinking and the earlier psychoanalytic theories of propping to an emerging multidisciplinary and relational model of the body. The connections sought between the different disciplines is in no way spurious, for there are shared philosophical problems and revolutionary shifts that lie at the foundations of the different disciplines.

The problem is that there has been uneven development: the old dualistic models keep returning and the radical implications of the paradigmatic shifts have not been sufficiently understood. My purpose here is to show how links can be legitimately made between the disciplines to reveal a more viable body model.

Finally in such a context, where the body is not an island but tied to a relational field, what also needs to be considered is the relation between the body and language. This was referred to early on as biosemiotics and in later thinking as non-verbal and bodily forms of social communication.

Philosophical Concerns in This Enquiry

This work will address the ontological presuppositions that exist in the models of the body which are examined. It is worth looking at philosophical assumptions that underlie basic axioms, for when a set of suppositions are accepted unquestioningly they are taken for granted as givens, as mere assertions. Investigating the beliefs that lie at the basis of a paradigm enables us to reflect and evaluate their status.

In *Being and Time* Heidegger (1962) points out that regional ontology, whether in the life sciences or the humanities, makes assumptions about the nature of the 'Being' under study. There are assumptions in science about the 'Being' of biology, as there are assumptions in psychoanalysis as to the 'Being' of the psyche. Heidegger notes how fundamental ontology which raises the general question of what 'Being' is underlies every regional ontology. Therefore an investigation of the very question what Being is has some relevance to every discipline.

As part of the journey ahead I deal with the fact that, despite revolutionary shifts, the mind/body and body/world splits persist as a residual dualism. This is an interdisciplinary problem, but I shall address this particularly in psychoanalytic models of the body. One of my main tasks will be to work through the impasses set up in these dualistic models. I hope to add something to the debates that still rage, but this book does not set out to be an exhaustive study or to resolve the issues. It will, however, raise core concerns.

In my entry on 'Biology' in *Feminism and Psychoanalysis: A Critical Dictionary* I wrote:

Since the eighteenth century, biology has referred to the scientific study of organic life, the logos founding the law of nature. Biology can either be an

open-ended scientific discipline, the ‘study of life’, or it can refer to a fixed and determined biological order. From its inception, psychoanalysis has made reference to the biological sciences. As a physician and neurologist, Freud was familiar with the natural and physical sciences of his day, and particular influences like Darwinism, and the physicality school of Brücke, Bois-Raymond, Helmholtz and others are well documented. There is a tension between the Freud who is in search of a biological bedrock and the Freud who develops a field of psychoanalytic enquiry. (Diamond 1992: 22)

One of the themes of this book is that if biology is understood as chiefly ‘logos founding the law of nature’, in other words as holdfast biological bedrock, the consequences are that biology remains fixed and determinate, a law entire unto itself. Such a figure of biology shows itself as not malleable to change. This will be contrasted with another model of biology, more open from the first, where it has insufficiencies from the beginning and is dependent on a relationship between two or more person-bodies where organism and environment are interdependent (Uexküll 1926).

The more open model, I suggest, allows a link between biology and semiotics and more complex language-based systems. Once the full implications of the more radical and open biological model are taken on board, the dualistic view is called into question and the biological bedrock model is fundamentally rewritten and reworked at its very foundations.

My aim is to foreground how the somatic terrain is much more open than has previously been understood, how somatic capacities can be altered by interaction with the fields of others and how this affects the development of bodily processes, their form and mode of expression. I suggest that the bodily symptom that is presented at the clinic and in everyday life in fact reveals a developmental interpersonal and social history. Reference to the ‘psychosomatic condition’ can be replaced by the term ‘socosomatic symptom’.

The Irreducible Organic Component and How It Figures for Us

Despite the inevitable interpenetration of the biological and social domains, there is always the ‘facticity’ (Heidegger) of the body: death is imminent, bodily processes can break down as pathological cell and tissue processes manifest themselves as cancer, for example, and so on. Merleau-Ponty referred to the irreducibility of the body that sets limits to existence that no one can ultimately control.

So despite the focus on somatic aperture, on biological plasticity and on the ramifications of interdisciplinary developments that open the body onto a relational field, there is always an aspect of the body that is irreducibly

organic and cannot ultimately escape death. This aspect is inevitable, leaving the human being and all living beings ultimately helpless and entirely vulnerable.

One of the possible meanings of the Lacanian ‘real’ is an aspect of the body that resists any form of comprehension, is fundamentally irreducible and ungraspable. Whereas I refer to the body that defies processing control or meaning and can never be tamed, to unbound body states that can be unleashed and can roam wild. These are associated with body phantasmagoria, the most macabre and estranged body experiences, reflecting the extremes of alterity, where any stabilized body identity is lost. Alexandra Lemma (2010) points out that the unbounded grotesque body is well explored in the phantasmagoria of the flesh in David Cronenberg’s films.

Neuroscience: One of the Important Bed-Mates

In the flourishing field known as neuropsychanalysis, headed by key thinkers and researchers like Mark Solms and involving many important neuroscientists and psychoanalysts, there are both tensions and differences in perspective as well as the attempt to produce a coherent and integrated model. One tension is the discrepancy between a one-person body and two-person body model and in this context between taking the individual organism as the primary unit of analysis, in contrast to the focus on what goes on between organisms. In the first model the biological determinants and psychic dynamics ‘internal’ to the organism take precedence, while in the second model intercorporeal relations play a central role and the impact of environmental influence is highlighted. It is the latter model that I favour and foreground in this book.

In addressing psychoanalysis and neuroscience I do not take neuroscience as the master discourse and I do not limit the analysis to neurobiological descriptions of dynamic brain processes. Instead I focus on a genuine interdisciplinary approach to psychoanalysis, drawing on social science and philosophy as well as neuroscientific findings. I also recognize the fact that psychoanalysis in its richness and complexity can at times inform neuroscience, and not only vice versa.

I will try and avoid neuroscientific reductionism which can lead to the following problems: (1) describing physiological, neurological and anatomical processes and features in depth as a way of explaining phenomena: as a method on its own, this does not explain the psychobiological experience, its phenomenology and meaning; it does not capture bodily perception and certainly none of its complexity; (2) the body is regarded too much as a reactive system to stimuli and hence descriptions of brain processes can be too mechanistic.

I reiterate the importance of exploring how meaning can play an active role in bodily experience and process. The broader role of semiotics and

language (understood in a broad sense and not reducible to linguistic phenomena) in body processes will be a key area in my exploration. It is not enough to resort to what I consider reifications of 'psyche' or 'mind' as meaning creators. This does not adequately take into account the way the social field and the world of others influence meaning-making.

In exploring interdisciplinary connections between neuroscience and psychoanalytic, social and philosophical thinking, I acknowledge the controversy as to the viability of such a project. With the recent upsurge of popularity in neuroscience within psychoanalysis and in areas of the social sciences there has been scepticism as to the scientific status of such applied neuroscience and questions regarding its usefulness in social and psychoanalytic studies.

In response to such concerns, I have tried to avoid the usual pitfalls, challenging neuroscience as master discourse, and any reductionism, while opting for a genuine interdisciplinary enquiry. However, beyond this, hypothetical models are part of any scientific exploration and evidence in the natural sciences is always being debated. The use of neuroscience in interdisciplinary research and by those who are not neuroscientists is evidently on more rocky ground, and scientific claims for evidence can be poorly made and substantiated.

The claims put forward in this book are suggestive. The neurological-social relations proposed are made to get the creative connections flowing further, to encourage debate, criticism and further research by specialists in the field(s). In this book the line between an imaginary and actual neurology is not clear-cut, but what is clear is the importance placed on the biosocial relation for understanding life and how it is lived.

Challenging a Top-Down Approach

In neuroscience the brain is central but always inextricably bound to body processes. As Jaak Panksepp (1998) implies, the brain is not suspended in a vat but exists in a body and a world. Despite the fact that in neuroscience there can be a tendency to localize brain functions, it is, of course, understood that in actuality these can be considered only in the context of processes across the brain and in complex brain-body dynamic relations.

In terms of brain functions, thinking has been related to synaptic links and the neural connections made. The cortical brain is described as connected to 'higher' social cognitive functioning but these processes cannot be regarded apart from the so-called subcortical brain where basic emotions are said to be located and are directly linked to affective bodily states, routed in body processes. These affective and bodily states have been aligned to the 'instincts'.

'Instincts' as a term relates to the translation of Freud and the resulting Anglo-American readings of Freud. Neuroscientists such as Jaak Panksepp

(1998) have discovered a number of neural emotive-motivational systems and this challenges Freud's more limited dual classification of the life and death drive. In respect to brain development the subcortical brain processes related to primary motivational systems are developed in an interactive nurturing context and later become 'integrated' into higher cortical processes.

This book challenges an over-mentalist approach: 'brain' is not an equivalent for 'mind'. In neuroscience the reification of the brain takes place when a top-down brain approach is advocated, a point of view that I question and do not subscribe to. As I have implied, the localization of brain functions has to be viewed in the context of brain-body processes. There are complex bidirectional loops involving sensory information from the environment, influences from sensory muscular and neural body processes, and interactions within complex brain dynamics.

Antonio Damasio and Gerald Edelman, both eminent neurobiologists, offer convincing arguments for the dependence of the brain on the body (Edelman 1992; Damasio 2000). Memory is not simply localized in the brain but exists throughout brain-body systems in interaction with the environment.

To counter the fallacy of a top-down approach: recent explorations into major organs such as the heart and the stomach have identified neural cells that are likened to brain cells in the heart and along the entire lining of the gut (Lacey and Lacey 1978; Gershon 1999; Lorimer 2001; McCraty 2004). Memory function and emotion have been related to the heart and the stimulation of hormonal changes in the body, while enzyme secretions generated by the stomach send messages to the brain concerning hunger, stimulations of hunger which may have no relation to the actual biological need to eat.

In highly developed robotics the patterning of sensorimotor coordination is possible only if memory systems are distributed throughout the 'organism' which gives insight into the human body situation (Pfeifer and Bongard 2007; Pfeifer and Hoffman 2010).

The Brain-Body Map

The figure representing the layout of the body in relation to the sensorimotor cortex of the brain is typically caricatured as a man with huge hands, lips and tongue. This is known as the homunculus (Figure 1.1). The brain's sensorimotor cortex strip is where the body map is said to lie (Figure 1.2). In the homunculus the exaggerated body parts reflect the concentration of sensory nerve endings, which lead to heightened sensitivity, in certain parts of the body. This brain map is routed through bodily processes and is precisely a brain-body map. For the brain-body map receives sensory and

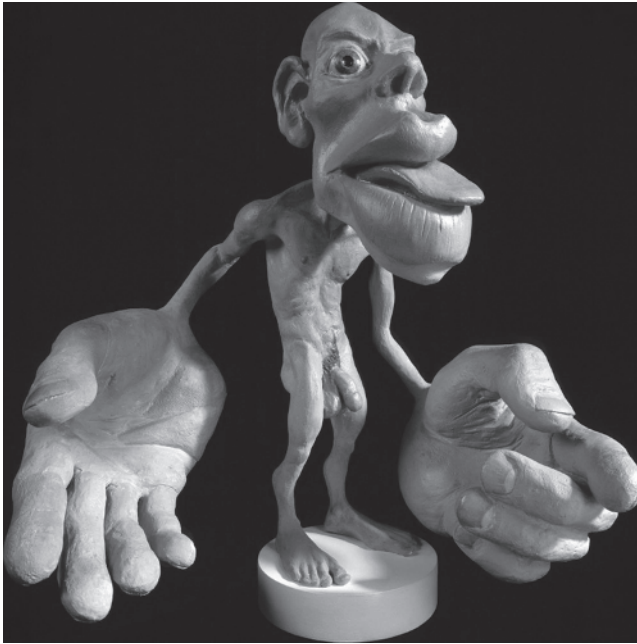


Figure 1.1 Brain-body map, or sensory homunculus. Photo © Natural History Museum, London.

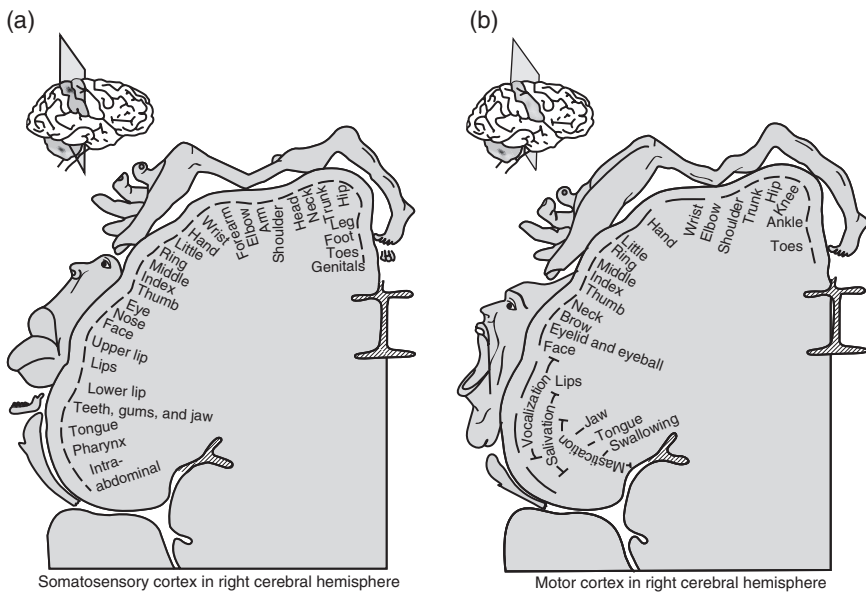


Figure 1.2 Brain-body map showing (a) somatosensory cortex in right cerebral hemisphere; (b) motor cortex in right cerebral hemisphere.

motor-neural information from the body and is also influenced by the way the body is mirrored and imaged.

The sensorimotor cortex strip is one of the most interesting areas of the brain related to the representation of the body. The brain-body map is the neurobiological correlate of Freud's body ego (Freud 1974 [1923]; Damasio 2000) which, I argue, is linked to the sensory body and is a construct. Figure 1.1 shows a body already influenced by representation. That it is represented as a man is, of course, related to the influence of social representations of the body; gender comes into the picture as the representation of the male body continues to enjoy hegemony in the way it is often used to stand for humankind, both male and female. The enlargement of the hands and lips relates to these being very sensitive areas; however, the genitals could arguably take up more representational space. Also, alterations can be brought about in the brain-body map, as there is neural plasticity (a fact which I shall make much of in this book).

How the body is stimulated and the use of body part(s) can alter sensitivity. There is a potential for any part of the body to become 'invested' and an exaggerated focus of attention a point Freud makes clearly. Developmental experiences can alter sensitivity in areas of the body, and this arguably has an effect in bringing about subtle changes in the brain-body map.

Although there is some basis in argument for a genetic brain map (Melzack 1999), the map is not determined by a genetic body map alone: there is significant neuroplasticity, as recent neuroscientific research has discovered (Ramachandran and Blakeslee 1999; Ramachandran and Rogers-Ramachandran 2000; see Part III). Price (2006) argues that congenital amputees are profoundly influenced by the image of the body derived from others, and proposes a developmental model where the body image derived from others plays a key role in the formation of the body map.

How the body is used, such as in motility and comportment, can influence the body map. The brain-body map is 'normally' influenced by sensory input derived from the interaction between body and environment. However, in cases where there is a loss of a limb, and therefore fresh sensory input is lacking, treatment using artificial limb and trickery with mirrors can activate the action-body memory and the mirror neurons, thereby creating a 'corrective' corporeal image-sensory feedback mechanism which can reduce lower limb phantom pain and thus alter sensory perception of pain (Ramachandran and Rogers-Ramachandran 2000). This illustrates how the visual image derived from the environment can influence the construction of the brain-body map.

Finally, a comment on the brain-body map: it has been referred to in the singular, but in fact there can be a number of them, or rather a variety of configurations in play. As the question of body image in relation to the body map is addressed, this possibility of different and changing

body images becomes apparent. The suggestion is that versions of the body influence brain–body mapping.

I shall consider the way the body is mirrored by the external environment, including how others play a role in this and in the development of the body image throughout the life span and the effects this has on the map. The brain–body map is not fixed. It can alter and can itself generate change. This is the effect of neural plasticity: the brain-body map(s) is not a static phenomenon.

Psychoanalysis: The Brain–Body Map and Body Image

I am interested in looking at the relationship between the neuroscientific exploration of the brain–body map and body image in the light of psychoanalytic insights regarding body image. As early as 1923 Freud noted that the neurobiological correlate of the body ego is located in the ‘cortical homunculus’ which lies across the sensorimotor cortex (see Figure 1.2 and Part III):

The ego is first and foremost a bodily ego; it is not merely a surface entity, but is itself the projection of a surface. If we wish to find an anatomical analogy for it we can best identify it with the ‘cortical homunculus’ of the anatomists, which stands on its head in the cortex, sticks up its heels, faces backwards and as we know, has its speech-area on the left hand side. (Freud 1974 [1923]: 16)

Neurobiological findings do suggest that this body-image ‘ego’ can be influenced by the mirror image and the mirror neurons imply that that this body-action image is based on the observation of others. The claim that mirror neurons are the neurobiological basis for an intercorporeal process links up with Merleau-Ponty’s observation of the mirror image derived from others and Lacan’s description of the mirror phase. I thus identify interdisciplinary connections for an understanding of the interpersonal and social formation of body image, and suggest a possible relation with brain–body mapping, a point that will be more adequately fleshed out and discussed in Part III.

Lacan’s understanding of the idealized and constructed nature of the image helps explain how body representations may exaggerate, alter and morph into something else, making body image potentially dysmorphic and changeable in experience. From a neuroscience perspective Ramachandran and Blakeslee (1999) comment on the way neural plasticity permits rapid change to take place in brain–body mapping.

The psychiatrist and psychoanalyst Schilder’s earlier contribution to an understanding of body image is invaluable. Schilder combined Carl

Wernicke's concept of the somatopsyché and Sir Henry Head's (1920) postural model of the body with Freud's (1974 [1923]) idea that the ego is primarily a body ego to arrive at his own formulation of the fundamental role of the body image. In *The Image and Appearance of the Human Body* (1950 [1935]) Schilder argues that body image can be related to sensorial body states and makes it clear that the body image cannot be reduced to a reified mental experience.

Schilder proposes a dynamic body image which is not fixed and has plasticity. Furthermore the body image is not static but for Schilder exists in lived motility, and is informed by kinaesthetic, visceral and other sensorimotor messages from the body. I embrace this aspect of Schilder's approach: his body image is not an abstract phenomenon in the realm of pure ideation; on the contrary, it is living and sentient, relating to motility and sensory states. Schilder's body image, like the brain-body map, is a multisensory construct.

Body Image versus Body Schema

Whereas Schilder relates the body image to body schema and therefore does not make an absolute distinction between image and motility, Gallagher and Cole (1998 [1995]) have argued for clarity in definition, noting the confusion between Schilder's body image and Head's postural schema. They wish to separate out body image from (postural) body schema. Although Gallagher (1986) has argued that a clear conceptual distinction between body image and body schema is helpful in working out functional differences, he also emphasizes that the conceptual distinction should not imply that at the behavioural level image and schema are unconnected or that they do not sometimes affect one another.

One of the key issues for Gallagher and Cole is that the body schema maps the body for motility and functions automatically, without our awareness, sub-personally and non-consciously governing our posture and movement, whereas they wish to designate body image as perceptual, intentional and conscious. In other words, body schema is the basis of movement as such and body image the basis of subjective experience. In Gallagher and Cole's formula, body schema has consistency in being basic to ongoing functional motility and the body image can perceptually alter according to 'subjective' state.

Why I Do Not Adopt Gallagher and Cole's Terminology

Although Gallagher and Cole's work is respected, there are various reasons why I shall employ another frame of reference and different terms. I would argue that complexity sets in when we consider a virtual geography that

can alter and vary, and is not separable from motility. The many examples of clinical symptoms discussed throughout this book testify to the inseparability of lived body states.

Further, Gallagher and Cole's thinking is situated in a cognitive framework, and so clear-cut definitions of terms introduce complications when the framework adopted is not that of cognitive psychology. In contrast to Gallagher and Cole's view, when body image is approached from a psychoanalytic perspective it is not mainly conscious or subjective. In Freud body image is unconscious as well as having a conscious aspect. Merleau-Ponty refers to the pre-reflective, and in this context the sense of body 'self' resides neither in a third-person nor a first-person perspective but can exist in an ambiguous position between embodied subject and other.

My approach is sympathetic to both Freud, who argues that body image can also be outside conscious awareness, and Merleau-Ponty, who believes that body image is not owned in a simple way by a unified 'I' but is predicated on the perspective of the other. A definition of body image that derives from and is endorsed by contemporary perspectives in psychoanalysis, phenomenological philosophy and neuroscience describes how body image(s) is (are) fundamentally influenced by others.

Body image is derived from the other (Lacan 1977a [1936]) and the space of the field of the Other,¹ mirrored from 'outside', as inevitably bound to otherness. Lacan refers to the Other as a position no actual person can occupy. I use the term here to emphasize how the body is always predicated on an otherness which it cannot appropriate as owned and to indicate how the body is subjected to an irreducible exteriority that is always there: there is always a look coming from the outside field which cannot be eradicated. Because I adopt a two-person and multi-person approach, subjectivity is never truly autonomous; intersubjectivity and intercorporeality are always in play. I shall argue that the third comes first, in the sense that otherness from the first defines the body; the perspective of the first person-body depends on and derives from a third-person perspective.

The work of Lacan and the use of the mirror metaphor can be seen as supporting the pictorial view of the body image, as can later findings regarding mirror neurons. Although the visual basis is coterminous with motor-neuron simulation in mirror neuron activity, Gallese, as we shall see, also relates tactility to mirror neuron simulation.

Furthermore, in regard to psychoanalytic understanding I shall also argue that there are grounds for relating the visual body image to touch and tactility, which give rise to what Benthien (2002) refers to as the primacy of the 'sensation ego'. It will be made clear what Benthien means and I shall consider the interpersonal basis of the experience of body sensations.

In lived body terms, there is evidently a complex relationship between body representation and sensory and motor effects. Neuroscientific work on phantom limb and related phenomena has noted how changes in body

representation produced in the brain–body map can have a profound influence on sensory body states. I suggest that alterations in brain–body representations can have an effect on motor skills and body movements.

I define body image uniquely and am interested in the relation between body image and body comportment, the more so given that I focus on how body representation should not be reified and conceived as an ideational construct alone. I want to understand how a body construct is not only visual but can also be kinaesthetic and, depending on the circumstances, can relate to body movement as well as sensation.

In conclusion, I respect Gallagher and Cole's terms, but distinguish my enquiry from theirs. Hence I define my concepts differently. I wish to retain the interrelationship between body perception and body action. I shall refer to the neuroscience-based sensorimotor cortex brain–body map, with the proviso of its greater complexity and its links to the psychoanalytic body ego. The brain–body map as I use it takes on board the relationship between the sensorimotor cortex strip as the homunculus gestalt with its links to the body ego/image phenomenon. In the sensorimotor cortex the visual image of the body can involve kinaesthetic changes and has links to the action body.

In my definition, the body ego cannot be reduced to a mental abstraction (which, it is evident, occurs in some of the psychoanalytic literature). By drawing on Schilder's observations of body image but linking this to the body ego and in turn relating the body ego to the sensorimotor cortex strip, it is possible to consider multisensory input – involving not only visual mirroring but also tactility, taste and the olfactory and thermal sense. It is also interesting to speculate on the possible relationship between certain alterations in the brain–body map and shifts that take place in body ego phenomena.

Working Towards a Brain–Body Mapping

When we deal with neuroscience and human complexity some degree of imaginary geography is always at work in the creation of the brain–body maps. The 'ego-body-centric' location is necessarily contentious (Kinsbourne 1998), as what is being dealt with is a complex of interacting brain processes and brain–body dynamics, and then there are the phenomenological descriptions of experience. The truth is the exact relationship between experiential phenomena and neurobiological process is never self-evident.

Nevertheless, in respect to the general functioning of the brain–body map, neuroscientists, as noted, have related this map to alterations in sensory and motor states. The sensorimotor strip(s) can generate sensory and motor experience and is wired up to sensory and motor neural pathways which are connected to designated areas of the body. Stimulus is both fed back to the sensorimotor cortex and generated by it. *I am interested in the way*

interpersonal and social 'messages' influence the body feedback and generative brain-body map.

In considering the virtual generative brain-body map terms like 'representation' are used. In neuroscience 'representation' requires more conceptual discussion and elaboration. As yet neuroscience does not benefit from the complex understanding and nuanced sense that such a term has in psychoanalytic and philosophical debates.

However, as already noted, psychoanalysis suggests that a body image can be reduced to an abstracted, pure idea status, albeit complex, relating to memory, fantasy and the like. I think Merleau-Ponty can help challenge this tendency to render the image as entirely abstract, rejecting the reified notion of 'idea' implied by traditional debates on representation that presupposed 'idealism' (he likewise rejected the inverse claims of a mechanical materialism). With Merleau-Ponty a representation cannot be separated from lived body states and, of course, a relational field.

Avoiding Mentalist Reduction

When exploring psychoanalysis I shall note that the focus is on the body as represented in image and fantasy. What will be identified as a key problem is the way these representations are understood to exist in the psyche/mind, whereby a split is created between the body as soma in the material world and the mind as the realm of ideation and symbol.

Could such an argument have a case if we translate mind to brain? Would it be true to say that the body as image/representation exists in the brain which can be likened to mind? *Between Skins* argues against this conclusion. (1) By referring to the brain we are in the world of physicality and the body and not in a dualist terrain of a disembodied psyche/mind. (2) The brain exists in the body. The sensorimotor cortex strip is complexly linked to different parts of the brain and sensorineural body processes/systems. (3) As indicated, all this takes place in relation to the world, to the social field of others and to the field of sensori-semiotic communications and construction.

Moving Towards a Brain-Body-Ego Relational Perspective: An Imaginary Lived Geography

In referring to psychoanalysis and developing the understanding therein, I shall address the formation of the body-skin ego phenomena and the way the gestalt configuration which is construed in the first six months of life can be altered developmentally depending on the type of relations with others (including attachment styles). Depending on the quality of mirroring and multisensory communication from others, the gestalt effect, it will be suggested, varies.

In perturbed relations a more chaotic and fragmented body ego can become more dominant and fundamentally disruptive, undercutting any idealized gestalt effect and the establishment of any relative stability in body gestalt. It is suggested that alterations in the body gestalt can affect the brain–body map which can not only bring about changes in sensory states but do so in motility as well, in so far as it is possible that body movement can be affected by disturbances in the body gestalt. This body gestalt is in turn affected by relational and emotional trauma and/or developmental failures/deficits.

My conjecture is that when the gestalt idealization is profoundly disrupted throughout development, or by later trauma or even injury, bodily being is necessarily affected. This impacts not only the body ego and image but also sensory body states, including the very integration of sensory and even expressive movement involving such areas as motor coordination, motility, posture, balance and style of comportment. There will be clinical examples and discussion of such phenomena throughout this book (see Part III).

And Finally

One of the views put forward is that compartmentalized rigid thinking is not helpful or appropriate when examining the brain–body–world relationship. It is important not to confuse conceptual distinctions for the purposes of clarification with the actuality of lived corporeal complexity.

In the chapters that follow I shall explore how relations with others, how we live in and use our bodies, semiotic and social ways of constructing the body through sensory communications (through gesture, touch and social imaging) all influence bodily experience. I shall develop a semiotic understanding of bodily processes and sensory states.

Note

- 1 I do not use strictly a Lacanian definition of the Other (reference will be made to his schema later). The point I am making here is that others are not defined by likeness as based in the self-same; others affect and effect us because they are unfamiliar, different, there being no self-referential point in this schema. I mean by ‘other’ the way the world of others retains otherness and the way the body of the actual other conveys something unknown and unfamiliar. The body of the other also expresses social forms of significance that are greater than the individual and that powerfully subject every actual body to a social will and to meanings that are not under the individual’s control.