

MERLEAU-PONTY AND EMBODIED COGNITIVE SCIENCE

Abstract

What would the Merleau-Ponty of *Phenomenology of Perception* have thought of the use of his phenomenology in the cognitive sciences? This question raises the issue of Merleau-Ponty's conception of the relationship between the sciences and philosophy, and of what he took the philosophical significance of his phenomenology to be. In this article I suggest an answer to this question through a discussion of certain claims made in connection to the "post-cognitivist" approach to cognitive science by Hubert Dreyfus, Shaun Gallagher and Francisco Varela, Evan Thompson and Eleanor Rosch. I suggest that these claims are indicative of an appropriation of Merleau-Ponty's thought that he would have welcomed as innovative science. Despite this, I argue that he would have viewed this use of his work as potentially occluding the full *philosophical significance* that he believed his phenomenological investigations to contain.

Introduction

In the Anglophone world since the 1970s there has been what is sometimes referred to as a "naturalistic turn" in philosophy. This has involved a "turning away" from a conception of philosophy as consisting principally in *a priori* methods of conceptual analysis, and towards a conception of philosophy as continuous with the natural sciences. This turn has been, in significant measure, inspired by the advances in

“cognitive science”, the new interdisciplinary science of cognition, where cognition is taken in its broad sense to include perception and emotion.

Theorists in the new interdisciplinary projects of the cognitive sciences take themselves to be in the business of constructing the first plausible scientific theory of consciousness. Although it has been largely ignored until very recently, interest in the phenomenological dimension of cognition has been steadily increasing. Within the last two decades the work of Merleau-Ponty has played a particularly prominent role in inspiring and guiding the development of a critique of the traditional conception of cognitive science as computational analysis and unconscious information processing that rests on the idea of the brain as functioning like a computer.

Most readings of Merleau-Ponty’s work as representing a strain of theorizing that is consonant with the cognitive sciences have not been particularly concerned with exegetical issues in Merleau-Ponty scholarship. It has not been the primary intention of these readers to reconstruct his position with exegetical precision (see e.g. Gallagher and Zahavi 2007, p.1; Varela, Thompson & Rosch 1991, p.xv). Rather, they claim that they are reading him primarily with an interest in the apparent convergence between his phenomenological descriptions and the results of contemporary cognitive science. The incorporation of his ideas in the context of cognitive science tends to position Merleau-Ponty in continuity with developments in cognitive science and cognitive science-oriented philosophy of mind. This continuity involves, as Shaun Gallagher puts it, “a convergence on a methodological plane” that centers on, “how phenomenology is put to use in the research fields of psychology and neuroscience” (Gallagher 2012, p.75).

An interest in Merleau-Ponty has been particularly prominent among a group of theorists referred to as “post-cognitivists”. The term “post-cognitivism” refers to a group of approaches in the cognitive sciences that argue for a vindication of the role of embodiment in the understanding of cognition. As Paco Calvo and Toni Gomila (2008, p.7) put it:

At a minimum, all these approaches conceive of cognition and behaviour in terms of the dynamical interaction (coupling) of an embodied system that is embedded into the surrounding environment.

The key themes are “embodiment” and environmental “embeddedness”.

In cognitive science, and in much philosophy of mind, Merleau-Ponty is read as offering a theory of perception consisting of a set of phenomenological descriptions. From this set of phenomenological descriptions, a set of arguments is derived that are said to be convergent with work in the empirical cognitive sciences and in contemporary philosophy of mind – for example, regarding the intimate interdependence of perception and action, the non-conceptual content of perceptual experience and the irreducibility of bodily perception.¹

The recent increase of interest in the role of the phenomenology of embodied perception by post-cognitivists, and their enthusiastic use of Merleau-Ponty’s work, raises a question concerning the *philosophical import* these readings take Merleau-Ponty’s phenomenology to have. This question can be fruitfully explored by asking: what would the Merleau-Ponty of *Phenomenology of Perception* have thought of this

¹ On non-conceptual content see: (Evans 1982); (Kelly 2001); (Peacocke 1989). On ‘enactive’ perception see (Noë 2004). And on the irreducibility of perception see (Carman 2005).

use of his phenomenology in the cognitive sciences? This question raises the issue of Merleau-Ponty's conception of the relationship between the sciences and philosophy, and of what he took the philosophical significance of his phenomenology to be. He was certainly always very interested in empirical scientific material and his breadth of understanding, particularly in the field of psychology, is clear from the range of discussion in his published work. Given this, there is little doubt that he would be enthusiastic about the project of the cognitive sciences as a tool to deepen our understanding of the details and complexities of consciousness. Nevertheless, it is my view that Merleau-Ponty would be concerned that this scientific interest in his work might serve to occlude the deeper philosophical significance that he sought to express. In order to indicate why, it will be instructive to look at certain claims made in the context of recent post-cognitivist proposals. The purpose of my analysis is not to provide a general critique of the authors I discuss – a task too complex to be achievable within present constraints – but rather to focus on certain specific claims that I think Merleau-Ponty would argue involve implicit “objectivist” assumptions. These assumptions have epistemological and ontological implications of the type that the *Phenomenology* argues we ought to ultimately reject.

The claims that I explore in Part One concern 1) the concept of the “intentional arc” in relation to a “connectionist” proposal by Hubert Dreyfus; 2) the concept of the “body schema” in relation to the “enactivist” approach taken by Sean Gallagher in his book *How the Body Shapes the Mind*; and 3) the concept of the “lived body” – “the body as we live it” – in relation to the characterization of embodiment in the groundbreaking “enactivist” work of Varela, Thompson and Rosch's *The Embodied Mind*. I argue that these uses of Merleau-Ponty tacitly “de-transcendentalize” his phenomenology in order to read it as a phenomenological

psychology that is consonant with the project of the cognitive sciences. I further argue that Merleau-Ponty would view this as potentially occluding the philosophical implications of his phenomenology because the attempt to theorize our consciousness scientifically, incorporating insights from his phenomenological account of the lived body, might be taken to make the transcendental dimension of his philosophy redundant. This is a problem because, although we do not address the transcendental dimension when engaged in a scientific approach to consciousness, his philosophical view is that when raising philosophical questions, as we inevitably must, we cannot quarantine an empirical exploration of the question of consciousness from a transcendental exploration. This is because the in principle limitations of a scientific approach necessitate a *philosophical* phenomenological account that is not entitled to presuppose the conceptual framework supplied to the science of psychology via other sciences, and ultimately resting on the “natural attitude”. In other words it requires a transcendental theorizing of consciousness built from a solid phenomenological base – a transcendental-phenomenological theory.²

In Part Two of the article I argue that given the methodological constraints imposed by Merleau-Ponty’s consistent application of the phenomenological “principle of evidence” – the stipulation that all theoretical constructions be grounded by phenomenological evidence – he holds that the only viable concept of the empirical-transcendental relation is one that is phenomenologically defensible. This is a different view to the conception of the relation that Husserl advocates and that Gallagher, for example, attributes to Merleau-Ponty in reading him as a

² Although Merleau-Ponty is a type of transcendental phenomenologist, his ‘existential’ position is substantially different from Husserl’s position that famously bears the name ‘Transcendental Phenomenology’.

phenomenological psychologist.³ The upshot of this is that, although it is certainly legitimate to read Merleau-Ponty as phenomenological psychologist with a great deal to contribute to the project of cognitive science and, despite the fact that he would have been an enthusiastic supporter of the project, he would nevertheless view these readings as potentially encouraging the misreading of the philosophical content of the *Phenomenology*.

1. De-transcendentalizing Merleau-Ponty for Cognitive Science

1.1. Hubert Dreyfus's Connectionist Proposal and the Intentional Arc

Although Dreyfus's suggestions in this direction are tentative, and he is well known for his role as the "Heideggerian gadfly of the cognitive science enterprise" (Varela, Thompson & Rosch 1991, p.xvi), he nevertheless affirms a potential continuity between Merleau-Ponty's phenomenology and cognitive science that rests on a "de-transcendentalizing" of Merleau-Ponty's philosophy. Holding that "cognitive scientists have much to learn from Merleau-Ponty" (Dreyfus & Dreyfus 1999, p.103), Dreyfus incorporates Merleau-Ponty's phenomenology in his critique of representationalism in cognitive science. Dreyfus strongly critiques the view that "intelligence consists in the acquisition and manipulation of internal symbols that stand for [or 'represent'] salient features of the environment" (Tauber 2008, p.23).

³ Gallagher's exploratory thinking addresses different audiences in such a way that it is not clear whether a particular presentation could be said to represent a "general position". Compare, for example, his discussion of hermeneutics in his contributions to *Merleau-Ponty, Hermeneutics, and Postmodernism* (1992), his discussion of "neo-Aristotelian neurobiology" in chapter 6 of *How the Body Shapes the Mind* (2006) and the arguments concerning phenomenology, transcendentalism and cognitive science presented in *The Phenomenological Mind* (2007) and "On the Possibility of Naturalizing Phenomenology" (2012). It is these latter arguments that I take myself to be addressing in this article.

In explaining the flaws in this view, and in his proposal of an alternative, Dreyfus suggests that we might equate Merleau-Ponty's notion of an "intentional arc" with the notion of a "feedback loop" in cognitive science. In *Phenomenology of Perception* Merleau-Ponty claims that:

... the life of consciousness—cognitive life, the life of desire or perceptual life—is subtended by an 'intentional arc' which projects round about us our past, our future, our human setting, our physical, ideological and moral situation, or rather which results in our being situated in all these respects (Merleau-Ponty 2002, p.157).

Dreyfus takes this concept to represent a certain kind of dialectical relationship between the active subject and its milieu. He explains that:

... the notion of a dialectic of milieu and action is meant to capture the idea that, in learning, past experience is projected back into the perceptual world of the learner and shows up as affordances or solicitations to further action. As Merleau-Ponty puts it, a 'person's projects polarize the world, bringing magically to view a host of signs which guide action ...' (Dreyfus 2005, p.132; Merleau-Ponty quote from Merleau-Ponty 2002, p.129)

Dreyfus articulates the intentional arc in the process of skill acquisition as a "feedback loop between the learner and the perceptual world" (Dreyfus 2005, p.132). Understanding Merleau-Ponty's notion of the "intentional arc" in this way then allows him to argue for a convergence between it and the non-representationalist theory of

neural networks. This theory, also known as “connectionism”, utilizes simulated systems of neurons called “neural networks”. The artificial neurons or “nodes” are programming constructs that mimic the properties of biological neurons. Whereas “GOFAI” (good old-fashioned AI) employs the sequential processing of information according to specified rules, neural net or “connectionist” approaches take the brain as their model. This attempt to simulate the brain means that the processing of information within a neural network is distributed throughout the entire network. As such, neural networks are said to be capable of “learning”. And they do so in such a way that in dealing with a new “situation” they do not have to rely on a stored memory or a rule in order to cope. Thus, it is suggested that they simulate what Merleau-Ponty describes as our basic non-representational bodily coping in everyday human performance. The logic of the argument is that neural-network theory and Merleau-Ponty's phenomenology of our basic bodily coping with the world can be claimed to stand in a relationship of mutual support in demonstrating the implausibility of representationalism.

Dreyfus argues that “the representationalist accounts of our most basic and pervasive forms of learning and skillful action are mistaken” and “require a different account”. This claim, he says, can be defended “not only on phenomenological grounds, but on neuroscientific grounds as well” (Dreyfus 2005, p.142). Merleau-Ponty (2002, p.159) holds the view that “consciousness is in the first place not a matter of ‘I think that’ but of ‘I can’”, an intentional bodily relation to the world whereby the world is revealed to us by and through our bodily capacity to interact with it. In the context of an argument for the importance of Merleau-Ponty's phenomenology to cognitive science, Dreyfus (Dreyfus & Dreyfus 1999) suggests that “Merleau-Ponty's account of the ‘I can’” might be “supplemented” (p.118) with an

account of how the body – conceived objectivistically as an “actual body-structure” (p.117) – shapes our cognitive capacities.

The general rationale behind Dreyfus’s move here is rooted in the way that a cognitive sciences approach views the intrinsic limitations of a purely phenomenological approach. Dreyfus suggests this in his discussion of how Merleau-Ponty’s phenomenological approach may be said to leave him without a convincing account through which to understand the reciprocal process characteristic of skilled behaviour: how “past experience is projected back into the perceptual world of the learner and shows up as affordances or solicitations to further action” (Dreyfus 2005, p.132). This is what Merleau-Ponty calls the dialectical process of progressive development and refinement of perceptual and motor capacities, and his phenomenology identifies it as a central feature of embodied perception. However, suggests Dreyfus, from the phenomenological perspective Merleau-Ponty is left to marvel at the “magical” nature of the perception-action feedback loop. Dreyfus is referring here to Merleau-Ponty’s claim that “for the normal person his projects polarize the world, bringing *magically* to view a host of signs which guide action ...”(Merleau-Ponty 2002, p.129 italics added) The suggestion is that the way acquired skills are projected back into our phenomenal field⁴ in terms of capacities for action or affordances can only be described by Merleau-Ponty as the phenomenal field being reconstituted, “being reorganized” by a “... law unknown to the subject” (Merleau-Ponty 2002, p.225). Thus, Merleau-Ponty uses the term “magic” to evoke the idea that this process is in no sense reliant on any act of the subject; rather, it is a structure of perceptual experience that simply passively occurs

⁴ The phenomenal field is Merleau-Ponty’s term for the meaningful field of experience that is constituted and reconstituted for us in a progressive and ongoing way as a result of our *bodily* interactions with the world.

and, as such, is phenomenologically available for description as simply “magically” occurring.

The important point for my present purpose is that in this proposal Dreyfus implies that a neurobiological account might be the appropriate place to supplement Merleau-Ponty’s incomplete phenomenological account, rather than just further phenomenological and conceptual exploration of the issue. However, Dreyfus’s proposal rests on an implicit modification of Merleau-Ponty’s phenomenology. This is evidenced in the move of translating the concept “intentional arc” into the concept “feedback loop”, a move carried out on the grounds of a deeper translation that takes place without sufficient argumentation; yet it is the philosophical ground that makes the former translation possible. This deeper translation consists of “de-transcendentalizing” Merleau-Ponty’s philosophical position in order to read it as a phenomenological psychology.

Phenomenological psychology understands phenomenological studies as forming a part of the science of psychology. This is an empirical science about “the nature of the psyche ... a science about psychical life understood as a real occurrent entity in the natural world” (Zahavi 2004, p.336). On Merleau-Ponty’s view phenomenological psychology, like any science, is philosophically “naïve” because it simply takes its subject matter “nature” for granted. In theorizing consciousness it thinks out of a background conceptual framework the fundamental categories of which are provided by the natural sciences. And the natural sciences are the methods of experimentally-oriented theorizing that address an objective world that it purports to discover out there wholly independent of human enquirers. This is as it should be because this presupposition is a core part of what constitutes something as a science.

This presupposing of the conceptual framework involves what Merleau-Ponty calls “objective thought” or “objectivism”. The claim is that cognitive science attempts to understand consciousness on an implicit ontological model. On this model the world is comprised of mutually exterior parts. Merleau-Ponty, in reference to Descartes, often uses the Latin phrase *partes extra partes* as shorthand for the idea that the parts that comprise the wholes that we experience are understood as having an external independent existence – without interdependence. They are thus subject-independent and atomistic. The other part of this implicit model is what he calls “the prejudice of determinate being” (Merleau-Ponty 2002, p.59). To hold the prejudice of determinate being is to unjustifiably presuppose the existence of a determinate world – a world consisting of a totality of determinate three-dimensional spatio-temporal objects with determinate properties and their relations. On this view, to use Joseph Margolis’s phrase, the world is both “determinate and knowable as such” (Margolis 2010, p.26). The scientific “naturalistic” approach is taken to be a formalization at the theoretical level of our “natural attitude” – our basic “natural” view that there exists a subject-independent world that is a totality of objects.

Merleau-Ponty’s project in *Phenomenology of Perception*, on the other hand, is a project of *philosophical* phenomenology. This project is one that does not presuppose objectivism in the service of a scientific understanding of consciousness, but instead asks fundamental questions about how experience and scientific theorizing are possible, on the grounds that “objective thought” is unable to adequately conceptualize meaningful lived experience within its categorial frame, and therefore the presupposition of objectivism cannot be *philosophically* warranted.

And so Merleau-Ponty advocates a transcendental philosophical position whose central methodological feature is the *phenomenological reduction*.⁵ What he explicitly seeks to do is to use this methodology to show why analyses in terms of concepts like feedback loops understood “objectivistically” are ultimately inadequate to capture the full holistic richness of what he characterizes as the “intentional arc” structure of our lived experience. Merleau-Ponty explicitly states that he is in the business of formulating a phenomenological ontology (an “existential phenomenology”), where his key technical terms the “body-subject”⁶ and “being-in-the-world”⁷ are understood to express structures of being – they are phenomenological-ontological categories, not just phenomenological ones.

The phenomenological reduction is precisely what secures a transcendental perspective for Merleau-Ponty. The transcendental perspective is a philosophical perspective that asks questions about what makes the phenomenal field possible, i.e. it asks the *transcendental question*: what are its conditions of possibility? But the phenomenal field – the field of experience - is only properly accessed via the

⁵ The phenomenological reduction consists of a methodological demand for a ‘change of attitude’. This change of attitude is intended to take us from the perspective of viewing the world as we normally do – as a mind-independent ‘real world’ – to viewing this self-same world in terms of how it comes to be meaningfully constituted in our experience.

⁶ Merleau-Ponty holds that a central expression of our fundamental ontological ambiguity can be seen in our experience of the ‘lived body’. The body is lived by me as being ambiguous between the notion of a pure ‘subject’ (a pure consciousness) and a pure ‘object’ (in the sense of an extended substance). His category ‘body-subject’ is intended to name this unique type of being.

⁷ Merleau-Ponty’s philosophy sees the relations between humans and the world as consisting in a complex and inextricable ‘intertwining’ between body and world. He rejects the (Cartesian) assumption that the world and the subject are ontologically separable. What phenomenological investigation reveals is that all of our experience is fundamentally world-oriented, through our pre-reflective intentional relation. There can be no objects of experience except through our taking up of those objects as figures standing out against a background, or world, which is essential for them being the objects that they are. The world for us is ‘always already there’; we are consciousness-for-a-world. Likewise there can be no conception of ‘world’ but through the body-subject’s capacities for having a world. A world is that which is structured in relation to the bodily explorations of a motor-intentional subject. His category ‘being-in-the-world’ is intended to name this primordial existential unity.

phenomenological reduction, the suspension of the natural attitude that underpins the perspective of scientific psychology, or any scientific approach. On his account, an existential ontology centering on the concept of the “body-subject” as “being-in-the world” provides the conditions of possibility for the phenomenal field. And the “phenomenal field”, being accessed through phenomenological reduction, is shown to provide the conditions of possibility for our “empirical perception” (Merleau-Ponty 2002, p.50) that takes the natural attitude for granted.

Merleau-Ponty holds this view because he is the most consistently phenomenological of philosophers, which means as a philosopher he will only countenance epistemological and ontological theoretical claims that are sufficiently phenomenologically grounded. And in his view a concept like “feedback loop” relies on a concept of causality that is without sufficient phenomenological warrant to be a *fundamental* ontological category. Whereas “intentional arc” is a descriptive concept that better captures the richness of the lived intentional body-world relation.

In Dreyfus’s proposal Merleau-Ponty’s phenomenology is no longer a transcendental phenomenology; it has been tacitly reconstructed as a phenomenological psychology in order for the argument to work. This implicit reconstruction understands Merleau-Ponty’s phenomenological claims as claims about the structure and content of embodied perceptual experience *within the natural attitude* and, thus, of the same order as claims made in the natural science of psychology. And given that they are reconstructed as claims about the cognitive experience of “the mind” or “psyche”, in the sense that this term is traditionally used in “philosophy of mind”, it follows, as Dreyfus suggests, that these claims can be deployed in the service of either the confirmation or disconfirmation of theories in the cognitive sciences.

Perhaps Dreyfus's proposal is intended to be read as an argument that a cognitive scientific perspective, if it is to progress beyond its present point, needs to learn from Merleau-Ponty's account of embodiment in order to avoid incoherence on its own terms. Basically, the idea would be that any and all representationalist approaches to perception necessarily fail and that connectionism at least avoids this non-start. And, given the centrality of skill acquisition to a theory of consciousness, it might fruitfully explore this area using Merleau-Ponty's phenomenological descriptions as a plausibility test for its theoretical models. This, of course, makes it an argument firmly within the epistemic framework of cognitive science.

Nevertheless, Dreyfus's proposal potentially occludes the philosophical significance that Merleau-Ponty would ultimately wish to emphasise. The key move here is his translation of the concept of the "intentional arc" in terms of that of a "feedback loop". He justifies this by referring to a statement in Merleau-Ponty's earlier work, *The Structure of Behaviour*, where Merleau-Ponty asserts the "dialectical" nature of the relationship between organism and environment in the following way: "the relations between the organism and its milieu are not relations of linear causality but of circular causality" (Merleau-Ponty 1963, p.15).

As Justin Tauber correctly argues in connection with this:

The translation from 'circular causality' to 'feedback loop' is certainly a lot less problematic than it would be from 'intentional arc' ... However, it isn't clear that Merleau-Ponty would himself endorse the equation of the meaning of 'intentional arc' and 'circular causality' given that, prior to introducing the former phrase in the *Phenomenology*, he writes that 'reciprocal action' is as yet only a compromise with causal thought, and

a contradictory principle' (Tauber 2008, p.24; Merleau-Ponty quote from Merleau-Ponty 2002, p.127).

So there is an important modification being undertaken with respect to the role of causal explanation in Dreyfus's proposal. But this is a modification that potentially encourages us to lose sight of Merleau-Ponty's philosophical intention, which is to argue that such causal explanation is ultimately *philosophically* inadequate to deal with consciousness. This, he argues, is because it fails to see how such explanation derives its meaning from the more basic level of meaning in lived experience, which eludes the best efforts of derivative explanatory "causal thought".

1.2. Shaun Gallagher and the Body Schema: Remapping the Terrain between Phenomenology and Neuroscience

The second example is Shaun Gallagher's (2006) recent use of Merleau-Ponty in his skillful attempt to negotiate the space between "the subpersonal level of cognitive mechanisms" and "the realm of phenomenology" (p.3). This project argues for the centrality of embodiment in the "development and proper functioning of various aspects of cognition" (p.4). Gallagher comes from the strand of post-cognitivism that argues for an "enactive" approach to cognition. Like Dreyfus these authors argue against representationalism and for the view of perception as a process essentially bound up with action. Alva Noë (2004, p.1) captures the main thrust of this "enactivist" view of perception in the following passage:

Perception is not something that happens to us, or in us. It is something we do. Think of a blind person tap-tapping his or her way

around a cluttered space, perceiving that space by touch, not all at once, but through time, by skillful probing and movement. This is, or at least ought to be, our paradigm of what perceiving is. The world makes itself available to the perceiver through physical movement and interaction ... [A]ll perception is touchlike in this way: Perceptual experience acquires content thanks to our possession of bodily skills. What we perceive is determined by what we do (or what we know how to do); it is determined by what we are ready to do ... we enact our perceptual experience; we act it out.

Gallagher's (2006. p.5) strategy is to "remap the terrain" between phenomenology and cognitive neuroscience through a vocabulary "developed around the conceptual distinction between body image and body schema"⁸ and an account of the role of "preroetic functions".⁹ This framework, he suggests, is one that can integrate "first-person phenomenology" and the "third-person science of embodied cognition" (p.6). This is because it "remains true to a phenomenological description of experience" while simultaneously remaining "open to empirical scientific explanation, especially from the perspectives of developmental psychology and cognitive neuroscience" (p.13).

In this project Gallagher (1998) reads Merleau-Ponty as addressing the issue of "bodily systems that operate on a subpersonal, automatic level" (p.223). Like

⁸ 'A *body image* consists of a system of perceptions, attitudes, and beliefs pertaining to one's own body. In contrast, a *body schema* is a system of sensory-motor capacities that function without awareness or the necessity of perceptual monitoring' (p.24).

⁹ '... those embodied processes and performances that cannot be reduced to neurophysiology, but that necessarily happen before one knows anything in a cognitive manner' (p.12).

Dreyfus, Gallagher suggests that Merleau-Ponty's extension of the concept of intentionality to include the motor intentionality of the bodily subject must inevitably run up against the limitations of the phenomenological method. Arguing that the role of the body schema is "impenetrable to phenomenological reflection", he concludes that it ought to be "worked out conceptually with the help of the empirical sciences" (p.223). However, Gallagher's use of the term "body schema" stands in the same type of relation to Merleau-Ponty's usage that Dreyfus's use of "feedback loop" stands to Merleau-Ponty's "intentional arc".

For example, Gallagher says that:

In the plural, body schemas (or schemata) refer to a collection of motor programs or motor habits that individually may be defined by a specific movement or posture, for example, the movement of hand to mouth. The motor schema, in this example, is more complex than it first might seem. Not only are the anatomical parts of hand and face involved, but also a large number of muscle systems throughout the body are activated for purposes of maintaining balance. One might refer to this entire complex organization of movement as 'a body schema', and consider that a subject is capable of many such complex patterns. When...I use the phrase 'body schema', it may refer to a particular schema or, more generally, to the larger system or collection of schemas (Gallagher 2006, p.24).

There are two inter-related issues that I think Merleau-Ponty would have with being associated with this characterization. The first one is that the discussion of the body schema in terms of a "collection of motor programs or motor habits" evidences

a slip between 'motor habits' – a concept that he would be comfortable with – and "motor programs" – a concept that he would view as resting on an implicit objectivism. Secondly, and connected with this, is Gallagher's use of the term to name a "collection" of "schemas" or "motor programs". I think that Merleau-Ponty would view this as an atomistic and pluralizing use of the term, the implication of which is that the general body schema that he discusses is ultimately a complex systemic aggregate of various motor programs, like the movement of hand to mouth. This objectivistic way of conceiving of it, I think he would want to say, eclipses the philosophical significance of the holism and generality displayed in the functioning of the lived body. In drawing out this philosophical significance Merleau-Ponty (2002) argues that "my body is that meaningful core which behaves like a general function" (p.170). He also argues that "the body is our general medium for having a world" (p.169). As such, the body schema is best "understood in terms of the general movement of being-in-the-world" (p.115).

On Merleau-Ponty's transcendental-phenomenological account, the body functions as "the subject of perception" by means of the "body schema". But the "body schema" for Merleau-Ponty is that which provides an *a priori* structure to human experience of the world. It manifests as a set of basic bodily capacities that are geared into an experiential world which calls on those capacities in a kind of "dialogue" between body and world. The three main aspects of the body schema are:

- 1) *The figure/ground structure in object perception* ("The perceptual 'something' is always in the middle of something else, it always forms part of a 'field'" (p.4).

2) *Our intrinsically perspectival orientation in space and time* (being embodied means that we are necessarily spatio-temporally situated and therefore everything we think or do is “perspectival”).

3) *The horizontal structure of the phenomenal field in general* (for example, as part of the meaning of “perceiving an object” each object has a “horizon” of other possible perceptions we might have of the object. It also has an “outer horizon” which is the implicitly perceived context in which it is necessarily situated).

In Merleau-Ponty's hands the concept is intended to articulate necessity conditions for being a human embodied perceiver. And despite being phenomenologically grounded, they are not empirical claims in the sense of empirical generalizations. The necessity conditions he articulates in his account of the body schema are contingent *a priori* conditions. *A priori* because even though they are phenomenologically constrained, the claims are not empirical generalizations; they are necessity claims regarding the constitutive structure for being a human embodied perceiver. Yet they are contingent because, unlike Kant, Merleau-Ponty is not talking about all possible perceivers – human or non-human – but only us, and our bodies might have been other than they are in fact are. This is a transcendental philosophical use of the concept “body schema” that Merleau-Ponty would wish to distinguish from Gallagher's phenomenological psychological version. And, as with Dreyfus's proposal regarding the intentional arc, he would be understandably concerned that the de-transcendentalized version might serve to encourage a way of reading the *Phenomenology* that loses sight of his philosophical intentions.

1.3. Varela, Thompson and Rosch: The “Double Sense” Conception of the Body and the “Lived Body”

My final example comes the work of Francisco Varela, Evan Thompson and Eleanor Rosch (1991). Despite the many valuable things that this groundbreaking work contributed to the field of cognitive science, on the strict issue of their interpretation of Merleau-Ponty there is a significant problem with their characterization of his conception of embodiment. In their proposal for an “enactivist” approach to cognitive science they attribute a “double sense” conception of embodiment to Merleau-Ponty. They assert that “for Merleau-Ponty, as for us, embodiment has this double sense: it encompasses both the body as a lived, experiential structure and the body as the context ... of cognitive mechanisms” (p.xvi).¹⁰ I think that this claim would cause Merleau-Ponty considerable concern. This is because this characterization fails to capture his conception of the lived body as the “third term *between* the psychic and the physiological” (Merleau-Ponty 2002, p.140n).¹¹ As a “lived body” we are neither pure subject nor pure object but rather experience a richly meaningful intentional “world”, resting on our basic bodily intentionality. His nuanced phenomenologically grounded attempt to understand the uniqueness of the lived body as a “between the two” (*entre-deux*) has been linked to a conception that more easily fits within the framework of the scientific project for which it has been invoked. In this characterization of embodiment, a view has been attributed to Merleau-Ponty that, again, implies his conception is that of a phenomenological psychology.

¹⁰ cf: their talk of the ‘sensorimotor structure of the perceiver (the way in which the nervous system links sensory and motor surfaces)’ (p.173).

¹¹ Hubert Dreyfus initially pointed this out in his review of their book, emphasizing Merleau-Ponty’s claim that the ‘body-subject’ instantiates a ‘genus of being’ (Dreyfus 1993).

In the *Phenomenology* Merleau-Ponty (2002) criticizes the neuroscientists and psychologists of his day for not seeing the full philosophical significance of the phenomenology of the lived body. For example, he takes Adhemar Gelb and Kurt Goldstein to task for the way that their presupposition of objectivism clouds their grasp of the phenomena. Merleau-Ponty argues that in their discussion of Schneider and other case studies:

Gelb and Goldstein ... have never named this third term *between* the psychic and the physiological, between the 'for itself' and the 'in itself' to which their analyses always led them and which we call existence. Hence their earliest works often fall back on the traditional dichotomy of body and consciousness (p.140n).

It is this subject/object dichotomy that appears to be replicated in the “double sense” view suggested by Varela, Thompson and Rosch: “the body as a lived, experiential structure” and “the body as the context ... of cognitive mechanisms”. Likewise, this doggedly persistent dualism haunts Dreyfus’s connectionist proposal and Gallagher’s “remapping of the terrain” between phenomenology and neuroscience.

Merleau-Ponty would argue that an awareness of a crucial role for the description of experience in the understanding of consciousness does not entail that one has grasped the *philosophical* significance of what he intended to designate by the term the “lived body”. For example, despite his regular praise for the important research of the Gestalt theorists – “the psychologists who practise the description of phenomena” – Merleau-Ponty nevertheless argues that they are “not ... aware of the philosophical implications of their method” (p.54). As a result of this philosophical “naiveté”, they ultimately try to explain “the ... objects in the [phenomenal] field” in

terms of “causes of ... perception” (p.55). This is because they are constrained by “the ideal” of an “explanatory psychology” that “betrays its own descriptions” by taking “as given the determinate universe of science” – placing “perceptual consciousness in the midst of a ready-made world” (p.55). In not questioning the “objective thinking of classical logic and philosophy” and “the alleged self-evidence of realism”, the Gestalt theorists fail to understand the need for a “phenomenological reduction” (p.57).

Gestalt theorists aside, Varela, Thompson and Rosch’s suggestion touches the core of Merleau-Ponty’s philosophy. This is because his whole position grows out of the notion of the lived body. In this case, I think he would be swift to point out that his account of the lived body has been “de-transcendentalized” because it is being viewed *within* the perspective of the natural attitude as the “psyche” aspect of a psycho-physical being. He would also want to point out that viewing it this way is certainly legitimate, but that this elision of the difference between his and their views indicates that Varela, Thompson and Rosch struggle to understand the proper philosophical significance of embodiment that Gelb, Goldstein and the Gestaltists also struggled to see, and that Merleau-Ponty argued for in the *Phenomenology*.

2. Quarantining Merleau-Ponty as Phenomenological Psychologist from Merleau-Ponty as Transcendental Philosopher

The preceding discussion might meet the response that, regardless of what he is up to in the area of transcendental philosophy, it is legitimate to read Merleau-Ponty as

a philosopher engaged in “what could be generally called phenomenological psychology” (Gallagher 2012 p.74) as a result of his “integration of phenomenology, psychology, and neurology” (Gallagher 2012 p.75). This “integration” is played out via his detailed concrete engagement with the psychological and neurological literature in *The Structure of Behaviour*, *Phenomenology of Perception* and his lecture course material on psychology (Merleau-Ponty 2010). And provided that we clearly acknowledge that there is a transcendental dimension to Merleau-Ponty’s philosophy proper in discussions of concepts that draw on his work, such as the “intentional arc” or “lived body”, then it is hard to see how he could take issue with this. However, Sean Gallagher’s recent discussion of this issue provides an interesting example of why things are not quite so clear-cut.

Now it might be argued that by giving an account of the transcendental dimension of phenomenological philosophy, and by acknowledging Merleau-Ponty’s transcendentalism, Gallagher has, without exploring it in detail, nevertheless demonstrated a clear grasp of the philosophical dimension of Merleau-Ponty’s thought. For Gallagher explicitly claims that a cognitive science approach does not straightforwardly serve to occlude or replace the transcendental phenomenological project. Rather, it simply does not address it because it is outside the scope of a scientific approach to consciousness. Let us briefly look at Gallagher’s account and how I think Merleau-Ponty would view it.

Gallagher (2007) says that “phenomenology is a philosophical enterprise; it is not an empirical discipline” (p.29). Despite this, phenomenological analyses clearly have “ramifications for and pertinence to an empirical study of consciousness and cognitive sciences” (p.29). Pointing out that “we can put the insights gained in

transcendental phenomenology to use in science” (p.29) he quotes Husserl, who argued that:

every analysis or theory of transcendental phenomenology – including . . . the theory of the transcendental constitution of an objective world – can be developed in the natural realm, by giving up the transcendental attitude (Husserl 1950, p.159).

In taking up the transcendental attitude we “move through methodological steps into the phenomenological stance”, but we can also “take the insights developed in that stance and carry them back into science” (Gallagher & Zahavi 2007, p.29).

Pointing out that his phenomenology is not “pure’ in the Husserlian sense”, Gallagher (2006) claims that his conception “follow[s] the path of Merleau-Ponty”, being “informed by extensive readings in psychology and neuroscience” (p.10). The Merleau-Ponty involved here is one where *The Structure of Behaviour* and *Phenomenology of Perception* are seen as consisting of basically the same “kinds of investigations” (Gallagher 2008, p.207). This view is taken to be illustrated by the fact that:

... although [Merleau-Ponty] did not engage in scientific experiments, he took contemporary empirical studies seriously and used science in an interdisciplinary fashion, to motivate his phenomenological investigations (Gallagher 2008, p.208).

Given this importance of empirical studies in motivating his phenomenology Gallagher argues that:

If we understand cognitive science in the very general sense of an interdisciplinary scientific enterprise that attempts to explain cognition, where cognition is defined to include not simply higher-order thought, but such things as perception and emotion, then Merleau-Ponty was certainly involved in that kind of enterprise (Gallagher 2008, p.207).

Now it is certainly true to say that Merleau-Ponty “used science in an interdisciplinary fashion, to motivate his phenomenological investigations”. It is thus true that he was involved in a sort of inter-disciplinary cognitive scientific enterprise before the fact.¹² But I think Merleau-Ponty would view Gallagher’s characterization of his involvement with the sciences as obscuring the transcendental dimension of his philosophy that Gallagher pointed to in *The Phenomenological Mind*. As such, Merleau-Ponty’s use of empirical research in the service of providing detailed concrete content with which to substantiate philosophical arguments intended to address *epistemological* and *ontological* questions might then recede from view. For Merleau-Ponty’s purpose in using empirical research is always to draw the reader’s attention to phenomena that can, and ought to be, re-described from the *philosophical-phenomenological* point of view. This is because it is *only from this perspective*, he argues, that its true *philosophical* significance can be grasped.

This point can be made clear if we look at the case study that Merleau-Ponty discusses at greatest length in *Phenomenology of Perception* – that of the aphasic “Schneider” who suffered from a brain injury as the result of being struck by a shell splinter during the First World War. The Schneider case is complex but a basic sketch of Merleau-Ponty’s (2012) analysis will suffice for my present point. Schneider

¹² He also held the Chair of Child Psychology and Pedagogy at the Sorbonne from 1949 to 1952.

can comfortably perform complex habitual concrete movements, such as those involved in making and mending clothes, but is unable to perform any “abstract” movements, like pointing his arm in a specified direction or locating unseen points of contact on his body (p.118). Schneider is also unable, for example, to engage in play-acting (p.156).

Despite the fact that he has retained his capacity for perception and habitual movement, he has lost of a sense of the range of possible movements that are normally available to us. Merleau-Ponty argues that this indicates that although he has retained a sense of his “phenomenal body”, his loss of the ability for “abstract” movement and play-acting indicates that he has lost the sense of his body as something objectively located in space and, as such, available for “gratuitous and free spatial thought” (p.119). The inability to orient himself in relation to the possible means that Schneider lacks the ability to “creatively reorganize the structure of [his] world and then retain this reorganized structure as a cultural ‘sediment’ within [his] experience of the world” (Baldwin 2004, p.16). But the purpose of going through the empirical material for Merleau-Ponty is to draw the reader’s attention to a crucial *philosophical* point. Merleau-Ponty’s goal in discussing the detail of the impoverished world that Schneider experiences as a result of his disorder is to bring into relief, by contrast, our normal motor-intentional capacities. Again, Merleau-Ponty’s (2002) discussion is complex, but a key point of showing us the “levelling-down of the world” (p.150) that Schneider experiences is to illustrate the way that:

It is this existential basis of intelligence which is affected, much more than intelligence itself, for, as we have shown, Schneider’s general intelligence is intact ... Beneath the intelligence as an anonymous

function or a categorial process, a personal core has to be recognized, which is the patient's being, his power of existing (p.155).

And Merleau-Ponty explicates "this existential basis of intelligence" in the very words that Dreyfus quotes in discussing of his connectionist proposal:

... the life of consciousness – cognitive life, the life of desire or perceptual life – is subtended by an 'intentional arc' which projects round about us our past, our future, our human setting, our physical, ideological and moral situation, or rather which results from our being situated in all these respects. It is this intentional arc which brings about the unity of the senses, of intelligence, of sensibility and motility. And it is this which 'goes limp' in [Schneider's] illness (p.157).

So Merleau-Ponty uses the Schneider case material with the express purpose of explicating his concept of motor-intentionality, our basic bodily intentionality, and thus to lay out an important foundation of his theory. But he does not simply stop at the phenomenological concept of motor-intentionality. Having laid this out, he goes on to explicate the ontological dimension of this motor-intentionality as the existential structure "being-in-the-world". His philosophical point is that empirical scientific accounts cannot adequately characterize this structure because their "objectivist" conceptual commitments cause them to miss the true epistemological and ontological implications of the phenomenological concept of motor-intentionality.

So even though Merleau-Ponty was involved in a kind of cognitive scientific enterprise before the fact, I think he would want to say that, however scientifically productive it may be, it encourages a misunderstanding of the *Phenomenology* to

read it as a work of phenomenological psychology. This is because Merleau-Ponty does not simply presuppose the natural attitude, unlike the cognitive sciences which *necessarily* presuppose it. As such he takes up a “critical attitude” with respect to the sciences and aims to provide a “radical reflection” (p.157) on their very possibility.

Now Gallagher might respond here that he is not advocating that it *only* be read as a work of phenomenological psychology, just that it is perfectly legitimate to do so in the interest of embodied cognitive science. However, there is a further issue that Merleau-Ponty would raise at this point. This is that Gallagher misunderstands Merleau-Ponty as a phenomenological *philosopher*, by characterizing him as a Husserlian who is involved in “a certain pragmatic application of phenomenological method” (Gallagher 2012, p.75).

It is Merleau-Ponty’s view that he, unlike Husserl, is the most consistent of phenomenological philosophers and, as such, he grounds all of his philosophy phenomenologically. He does so in the sense that all conceptual distinctions must have phenomenological warrant, even the empirical-transcendental one. What this means is that on Merleau-Ponty’s view one is only warranted in making the distinction *as an embodied situated subject*, that is, *perspectivally*. And given this perspectival conception, any transcendental claims that he makes are always relativized to, and constrained by, the situated experience of a lived body-subject.¹³ The effect of this is to relativize and historicize the distinction – some would say undermine it – and turn it into something quite different to Husserl’s ahistorical

¹³ For example, he characterizes the philosophical problem of understanding the nature of visual perception as that of understanding ‘how vision can be brought into being from somewhere without being enclosed in its perspective’ (Merleau-Ponty 2002, p.78). As Sebastian Gardner observes: ‘vision must be relativized to something that is not a point *in the world*, that could itself become an object of vision or be located in objective, geometrically determined space, but that is nevertheless ‘somewhere’, i.e. that has the perspectival character of a *point*’ (Gardner 2007, p.20).

empirical-transcendental distinction, with its corollary contingent-necessary, fact-essence, relative-absolute structure. In his attempt to be consistently phenomenological throughout, Merleau-Ponty ends up making transcendental claims that are ultimately “contingent *a priori*” or “historical *a priori*”.¹⁴ Now, regardless of whether this account is or could be made defensible, given Merleau-Ponty’s radically consistent methodological commitment to “the principle of phenomenology” it is all he is able to claim.¹⁵

How clear Merleau-Ponty was on this at the time of the writing of *Phenomenology of Perception* is a debated question, as he is less than fully explicit on the issue. He does, however, clarify his view in a discussion of the convergence between phenomenology and psychology in “Phenomenology and the Sciences of Man” (Merleau-Ponty 1964). Gallagher (2012) reads this discussion as addressing a convergence regarding “how phenomenology is put to use in the research fields of psychology and neuroscience ... a convergence on a methodological plane” (p.75). Despite this convergence, Gallagher says that “the transcendental project remains as its own phenomenological project” (p.75). But reading Merleau-Ponty’s talk of convergence in this fashion involves a quarantining of the empirical from the transcendental that is Husserlian, not Merleau-Pontian.

¹⁴ Joseph Margolis, for example, argues for a version of this view in ‘Phenomenology and Metaphysics: Husserl, Heidegger and Merleau-Ponty’ (Margolis1991).

¹⁵ This pushes him in the direction of hermeneutics and, arguably, the *Phenomenology* is a text that is ‘on the way’ – well ‘on the way’ – to hermeneutic phenomenology.

Husserl characterizes the empirical-transcendental relation as a kind of “parallelism” (Merleau-Ponty 2002, p.58n45)¹⁶ where there are two sharply defined levels that directly parallel each other, e.g. the “transcendental ego”¹⁷ is the parallel of the “empirical ego”. But, for Merleau-Ponty, the phenomenology of the perception, the lived body, and the passive constitution of the background, by showing that subjectivity is intricately realized through a body that necessarily inheres in a “world”, makes this view untenable. Instead he ends up understanding the empirical-transcendental relation in terms of the “founding-founded” model revealed by phenomenological analysis.¹⁸ Remember that his is a fully phenomenological theory so that when we make a transcendental claim we make it as a situated body-subject in a “world” and so our empirical experience (in the phenomenological sense, because under the reduction) has conditions of possibility that are necessary conditions that make being what it is possible. However, these constrained transcendental claims are relativized to the perspectival embodied subject. Thus, they cannot be transcendental in the same absolute, non-perspectival sense as Husserl’s. This is because a philosophy built out of the lived experience of the “body-

¹⁶ Husserl makes this parallelism claim in *Ideas 1* and it is contestable as to whether it is applicable to his later genetic phenomenology. For the purposes of the present article, however, I leave aside the interesting question of the status of this claim *vis a vis* Husserl’s late work.

¹⁷ Husserl’s term for the intentional centre of all conscious life: a reflecting subjectivity understood to transcendently ‘constitute’ the world of experience, including itself as an empirical ego on the world.

¹⁸ Merleau-Ponty’s view here is complex but the basic idea is that the sharp distinction between claims regarding empirical facts as ‘probable’ and (transcendental) claims regarding essential structures as ‘certain’ is not defensible. This is because phenomenological analysis reveals that ‘reflection’ – the ‘founded’ – stands in a ‘two-way relation’ with ‘the unreflective’ – the ‘founding’. The reflective articulation of an ‘essence’ must be understood as ‘an intellectual taking over, a making explicit and clarifying of something concretely experienced, and a recognition that it comes after something else, from which it starts is essential to its nature’ (Merleau-Ponty 1964, p.68).

subject” – as opposed to the “transcendental consciousness” of a metaphysical entity called the “transcendental ego” – is not entitled to such claims.

The implication of this for Merleau-Ponty is that empirical and transcendental modes of enquiry and claims cannot ultimately be quarantined because they are bound together in a tight founding-founded relationship that is mutually reciprocally defining. So transcendental philosophy and cognitive science, on Merleau-Ponty’s conception, are not as easily cordoned off as Gallagher’s Husserlian characterization of the issue suggests. This is why Merleau-Ponty (2010) argues that “the distinction between phenomenology and psychology must not be presented as a rigid distinction” (p.329). Not only because of Gallagher’s “convergence on a methodological plane”, but also because this methodological convergence indicates a recasting of how we ought to think about the empirical-transcendental relation. For Merleau-Ponty, psychological studies draw attention to experiential material that necessitates a transcendental analysis in order to explore its conceptual presuppositions. And the conceptual base that structures the theorizing can only possibly be known to be adequate in connection to a close exploration of empirical detail that concretely tests out its applicability.

At the end of *The Structure of Behaviour* (1963) Merleau-Ponty says that it is “necessary to define transcendental philosophy anew in such a way as to integrate with it the very phenomenon of the real” (p.224). Gallagher sees this statement as being consonant with his conception of a “naturalized phenomenology”. On his view, the effects of doing phenomenology in close concert with the cognitive sciences mean that the transcendental dimension of phenomenology will be necessarily modified as a result of accommodating the close concrete detail involved. Merleau-Ponty, however, might justly protest that this programmatic statement from the last

page of *The Structure of Behaviour* lays out precisely what he takes himself to have achieved via the philosophical content of his subsequent book *Phenomenology of Perception*. And so he would view Gallagher's characterization as not adequately acknowledging the way in which Merleau-Ponty "define[d] transcendental philosophy anew" in the *Phenomenology*.

Conclusion

The preceding analyses are hardly exhaustive of the varieties of moves made in post-cognitivism but they are at least suggestive of concerns that I think Merleau-Ponty would have with the use of his phenomenology in these projects. On Merleau-Ponty's view, scientific enquiry plays a crucial role in helping bring to light and focus our attention on important features of the body and perception through a systematic and rigorous methodology that involves ascertaining patterns using perceptions *within the natural attitude* to check one another. These empirical patterns, however, ought to be integrated into a theory of human being in order for their full philosophical significance to be grasped. From this philosophical angle of vision Merleau-Ponty wants to argue that human beings cannot be adequately conceived as objects that have the property of consciousness. This is because our body is not an object; it is that which, due to its intrinsic ontological ambiguity,¹⁹ gives us our openness to objects and the world in which they appear. The structure of the body provides the contingent *a priori* body schema that structures our experience, and so any ontological meaning that we can arrive at is fundamentally dependent for its appearance on this body schema. On this account a scientific approach will

¹⁹ See footnote 24.

ultimately be unable to do justice to consciousness because it presupposes an objectivism that is incapable of accounting for the essential features of lived experience: intentionality, meaning and normativity.

It is only by taking a transcendental turn and problematizing these assumptions that the philosophical significance of empirical scientific studies can be properly drawn out. For Merleau-Ponty this means a way of theorizing that preserves the critical and experimental functions of scientific thinking and research, but that nonetheless doesn't shy away from a reinterpretation of the transcendental meaning of empirical studies undertaken within the natural attitude.

In different ways, the proposals that I have discussed represent a pattern of largely tacit de-transcendentalizing of his views that I think Merleau-Ponty would welcome as an innovative incorporation of phenomenology into the scientific exploration of consciousness. Nonetheless, he would be philosophically wary due to their potential to encourage an occlusion of the philosophical intent of the *Phenomenology*. The pattern involves an interpretation of the claims he makes in that text as those of a phenomenological psychology that does not take up a *philosophically* "critical" attitude. However effective the lines of argument proposed by Dreyfus, Gallagher and Varela, Thompson and Rosch are when viewed as arguments against representationalist approaches to perception *within cognitive science*, Merleau-Ponty would see his recruitment for this purpose as particularly worrisome if the reading of him as phenomenological psychologist were to promote the view that the reading of him as transcendental philosopher was in some sense redundant. The urgency of this concern is only sharpened when we realize that, unlike on the Husserlian model of the empirical-transcendental relation, on Merleau-Ponty's conception we cannot ultimately quarantine the empirical level from the

transcendental dimension. Thus, although he would certainly be an ally of the interdisciplinary cognitive sciences, he would be a very critical one.

References

Baldwin, Thomas. 2004: 'Editor's Introduction', in Thomas Baldwin (ed.) *Merleau-Ponty: Basic Writings*, London & New York, Routledge.

Busch, Thomas W. and Gallagher, Shaun. 1992: *Merleau-Ponty, Hermeneutics and Postmodernism*, New York, SUNY Press.

Calvo, Paco and Gomila, Toni (eds.) 2008: *Handbook of Cognitive Science: An Embodied Approach*, Oxford, Elsevier.

Carman, Taylor. 2005: 'On the Inescapability of Phenomenology', in A. Thomasson and D. W. Smith (eds.) *Phenomenology and the Philosophy of Mind*, Oxford, Oxford University Press, pp. 67-92.

Dreyfus, Hubert. 1993: 'Review of Varela, Thompson and Rosch, *The Embodied Mind*', *Mind*, 102, pp. 542-546.

Dreyfus, Hubert L. and Dreyfus, Stuart E. 1999: 'The Challenge of Merleau-Ponty's Phenomenology of Embodiment for Cognitive Science', in Gail Weiss and Honi Fern Haber (eds.) *Perspectives on Embodiment: The Intersections of Nature and Culture*, London, Routledge, pp. 103-120.

Dreyfus, Hubert. 2005: 'Merleau Ponty and Recent Cognitive Science', in T. Carman and M. B. N. Hansen (eds.) *The Cambridge Companion to Merleau-Ponty*, Cambridge, Cambridge University Press, pp. 129-150.

Evans, G. 1982: *Varieties of Reference*, Oxford, Clarendon Press.

Gallagher, Shaun. 1998: 'Body Schema and Intentionality', in José Luis Bermúdez, Anthony Marcel, and Naomi Eilan (eds.) *The Body and the Self*, Cambridge, MA, MIT Press, pp. 225-244.

Gallagher, Shaun. 2006: *How the Body Shapes the Mind*, Oxford & New York, Oxford University Press.

Gallagher, Shaun and Zahavi, Dan. 2007: *The Phenomenological Mind: An Introduction to Philosophy of Mind and Cognitive Science*, London, Routledge.

Gallagher, Shaun. 2008: 'Cognitive Science' in *Merleau-Ponty: Key Concepts*, Stocksfield, Acumen, pp. 207-217.

Gallagher, Shaun. 2012: 'On the Possibility of Naturalizing Phenomenology', in Dan Zahavi (ed.) *The Oxford Handbook of Contemporary Phenomenology*, Oxford, Oxford University Press, pp. 70-93.

Gardner, Sebastian. 2007: 'Merleau-Ponty's Transcendental Theory of Perception'. Available for download from: http://www.philosophy.ed.ac.uk/events/seminars/documents/Gardner_Ponty.pdf

Husserl, Edmund. 1950: *Cartesian Meditations*, The Hague, Martinus Nijhoff.

Kelly, S. D. 2001: 'The Nonconceptual Content of Perceptual Experience: Situation Dependence and Fineness of Grain', *Philosophy and Phenomenological Research*, 62, pp. 601-608.

Margolis, Joseph. 2010: *Pragmatism's Advantage*, Stanford CA, Stanford University Press.

Margolis, Joseph. 1991: 'Phenomenology and Metaphysics: Husserl, Heidegger and Merleau-Ponty' in M.C. Dillon (ed.) *Merleau-Ponty Vivant*, Albany NY, State University of New York Press.

Merleau-Ponty, Maurice. 1963: *The Structure of Behaviour*, Boston, Beacon Press.

Merleau-Ponty, Maurice. 2002: *Phenomenology of Perception*, London, Routledge.

Merleau-Ponty, Maurice. 1964: 'Phenomenology and the Sciences of Man' in *The Primacy of Perception and Other Essays on Phenomenological Psychology, the Philosophy of Art, History and Politics*, Evanston, Northwestern University Press.

Merleau-Ponty, Maurice. 2010: *Child Psychology and Pedagogy: The Sorbonne Lectures 1949–1952*, Evanston, Northwestern University Press.

Noë, Alva. 2004: *Action in Perception*, Cambridge MA, MIT Press.

Peacocke, C. 1989: 'Perceptual Content' in J. Almog, J. Perry, and H. Wettstein (eds.) *Themes from Kaplan*, New York, Oxford University Press.

Tauber, Justin. 2008: *Invitations: Merleau-Ponty, Cognitive Science and Phenomenology*, Germany, VDM Verlag Dr Muller Aktiengesellschaft & Co.

Varela, Francisco, Thompson, Evan and Rosch, Eleanor. 1991: *The Embodied Mind: Cognitive Science and Human Experience*, Cambridge MA, MIT Press.

Zahavi, Dan. 2004: 'Phenomenology and the Project of Naturalization', *Phenomenology and the Cognitive Sciences*, 3, pp. 331-347.