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Embodiment and Emergence: Navigating an Epistemic and Metaphysical Dilemma

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Abstract: In this paper, I consider a challenge that naturalism poses for embodied cognition and enactivism, as well as for work on phenomenology of the body that has an argumentative or explanatory dimension. It concerns the connection between embodiment and emergence. In the commitment to explanatory holism, and the irreducibility of embodiment to any mechanistic and/or neurocentric construal of the interactions of the component parts, I argue there is (often, if not always) an unavowed dependence on an epistemic and metaphysical role for emergence, especially concerning certain embodied capacities (motor-intentionality, know-how, skilful habits, affordances, etc.). While the problem of emergence is standardly dismissed as a problem for phenomenology, which brackets away the kind of materialist (and scientific) picture from which reflection on emergence derives, I argue that once a phenomenologist takes a fully-fledged embodied turn, they also have a genuine dilemma of emergence to confront, and I evaluate the relevant options.

Keywords: phenomenology, embodiment, naturalism, emergence, enactivism.

In this paper, I consider a challenge that naturalism poses for work in embodied cognition and enactivism, as well as for phenomenology of the body that has an argumentative or explanatory dimension. These important theoretical trajectories share a commitment to explanatory holism, based on an alleged irreducibility of embodiment to any mechanistic or neurocentric construal of the interactions of the component parts. That claim is perhaps reasonably uncontroversial. More controversially, however, I argue that these theories often have an unavowed dependence on emergence in making their cases, either epistemically, or metaphysically, or both.¹ And for standard formulations of naturalism, emergence is

¹ I am not claiming that this naturalist dilemma concerning emergence holds for *all* versions of phenomenology. I think it is implicit in much phenomenology of the body, including many (but not all) of the uses to which the *Leib/Körper* distinction is put (but for an alternative argument in regard to Husserl see Staiti 2016). In other words, my paper is less a direct phenomenological

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designated as problematic, being indicative of a non-naturalist or dualist dimension that warrants scrutiny.

While the relevance of the problem of emergence to debates in embodied cognition has been recognised, to an extent, it has rarely been considered in regard to phenomenology of the body. Indeed, it is standardly dismissed as a problem for phenomenology, which is said to be metaphysically neutral regarding the kind of materialist (and scientific) picture from which reflection on emergence initially derives. Without simply giving in to the demands of orthodox naturalism, however, I argue that once a phenomenologist takes a fully-fledged embodied turn and gives up on the transcendental ego,² they also have a dilemma of emergence to confront, especially if accompanied by claims concerning embodied capacities (motor-intentionality, know-how, skilful habits, affordances, etc.) that cannot be adequately understood in reductive and/or physicalistic terms. To argue this case, I will proceed as follows:

- (1) introduce emergence in its scientific and philosophical contexts, including “strong” and “weak” versions of the view;
- (2) discuss its significance for embodied cognition today, and the epistemic and metaphysical dilemma that it poses there;
- (3) show how a related dilemma arises in phenomenology of the body, focussing on the *Leib/Körper* distinction, embodied know-how, and the body-schema;
- (4) contextualise this in regard to the work of Maurice Merleau-Ponty;
- (5) highlight an unrecognised emergentism in Shaun Gallagher’s enactivism.

1 Emergence

Reflections on emergence derived from biology and chemistry at the end of the nineteenth century.³ The British Emergentists aimed to develop a theory of

contestation of the distinction itself (though I ask some questions about that), but a contestation of claims of priority and irreducibility based upon it, and what they are taken to mean for life sciences of the living-body.

2 That is, rather than considers the body as a special type of constituted entity available to transcendental phenomenological reflection *a la* some construals of Husserl (e.g., Staiti 2016). Staiti’s view embraces an ontological pluralism that sidesteps naturalist concerns regarding univocity and the causal closure of the physical. That view may or may not be correct, of course, but I don’t think it is ultimately a naturalist one, even accepting Staiti’s point that we should resist a certain sort of “naturalist” blackmail about what exists and/or is real. Other problems arguably also afflict a version of phenomenology committed to the transcendental ego rather than the facticity of the body-subject (see Carman 1999).

3 This was contemporaneous with the origin and development of phenomenology but to my knowledge without any clear causal-historical link.

nature and other resources required to forge a middle-way between what we might today call reductive naturalism (physicalism) and non-naturalism/dualism. To do this, they emphasised the *dependence* of any ostensibly emergent phenomena on its physical “base”, while also insisting on the *distinctness* of these higher-level or emergent phenomena, and hence they accorded a level of novelty, unpredictability, and autonomy, to those emergent phenomena in regard to the base. Such a position aimed to rule out the possibility of any global reductionism, whether in terms of the interaction between lower and higher-level properties, or in regard to the idea that constitutive principles in biology might ultimately be reduced – via bridge laws – to more fundamental laws in chemistry and physics. Emergentism hence proposed an ontological solution, a have one’s cake and eat it too strategy: on the one hand, naturalist enough to avoid the spiritualism or vitalism that preceded them; on the other hand, non-naturalist enough to avoid reductionism and what Rob Wilson has called “smallism” (Wilson 2004), wherein that which is real or exists gets associated with micro-physical parts, which is also where the real causal action lies. Whether the emergentist middle-way solution works, of course, has been much disputed (Chalmers 2006; Ganeri 2011; DeCaro 2010). Although there is today a renaissance and revival of emergentism in both science and philosophy, which to some extent transforms the ways in which emergence was conceived of in the first half of the twentieth century, most philosophers nonetheless think that what is called strong (or metaphysical) emergence succumbs to dualism, and what is called weak (or epistemic) emergence remains compatible with, rather than a challenge to, physicalism.

We will come back to this distinction and the dilemma regarding whether it collapses or not, but it is worth first considering an example of emergence: the self-organising and non-linear properties of the convection roll in boiling water (or cooking oil). Although the temperature at which water boils is experimentally reproducible and entirely *expected and unsurprising* at an ordinary habitual and inductive level for those of us who regularly consume tea or coffee, the particular way in which the convection roll and Bénard cells are arranged and swarm (clock-wise or counter-clockwise) is nonetheless *unexpected and surprising* according to our theoretical knowledge of the respective laws and the interactions of the molecules at temperatures lower than 100 degrees. The emergent/structural properties of the system derive from the local interaction of molecules, but at the same time also constrain those local interactions. Convection rolls exhibit three features that are often cited in the literature on emergence, and these will guide our account of emergence in what follows: “novelty, unpredictability, and the causal efficacy of emergent properties or structures” (Mitchell 2012, p. 173). To gloss, something new emerges that was unpredictable according to any analysis focused exclusively

upon on the component parts, and the “whole” or the “structure” causally influences the parts.

In philosophy of mind, debates concerning emergence have also played a significant role. Here the question of the potential “spookiness” of the idea of “downward” or “structural” causation is central. The basic debate in these circles concerns the relationship between mental and physical properties. Are they identical? Any claim that they are identical faces intuitive obstacles (perhaps dualist ones), as well as others stemming from claims concerning the multiple physical realisability of mental events, processes, or properties. As a result, contemporary physicalism usually depends on a thesis of supervenience, holding that mental facts supervene on physical ones, and that any global (or structural) properties of the former reflect the composition and patterns of the (physical) parts. Whether this position can accommodate what Donald Davidson called the anomalousness of the mental might be debated, likewise in regard to the idea of free will (see DeCaro 2010). For our purposes, however, the basic point is that any weaker position than supervenient physicalism, if it avoids dualism, is usually thought to fall into an emergentist camp (see, e.g., Stoljar 2001). As such, emergence primarily plays a negative role in the literature as something to be avoided. This is the case, for example, in Jaegwon Kim’s influential critique of non-reductive physicalism (Kim 1999). Kim criticises the idea of downward or backward causation, suggesting that it is incompatible with naturalist principles concerning the causal closure of the physical (i.e., all physical events have only physical causes). In essence, he argues that non-reductive physicalism will end up collapsing into emergentism or dualism, depending on the kind of structural causality involved and the extent of the novelty and unpredictability of the higher-level or emergent structures.⁴

Some other philosophers of mind are more open to an emergentist position. For David Chalmers, for example, the mind is a key case (perhaps the only one) of what he and others call *strong* emergence, where the emergent phenomenon is thought of as necessarily resistant to analyses in terms of physical patterns and structures, and hence natural scientific intelligibility (Chalmers 2006). Any given moment of consciousness emerges from neuronal activity, but cannot be reduced to that activity. A thesis of *strong emergence* insists that something metaphysically new arises at a structural level and exerts an irreducible causal impact on the component parts, confounding some of the standard ways of understand cause and effect and the relationships between lower and higher-

⁴ I accept, however, with Thompson (2007, pp. 417–41), that Kim’s synchronic conception of emergence may not be the only way to go. See also Kirchhoff (2014); Humphreys (2016).

level properties. Exactly how this might work in regard to consciousness (the emergent property) constraining the neurology (the local properties), is a complex issue, but there are studies suggesting that patients can occupy themselves (e.g., by doing mathematical calculations) in order to avert an epileptic seizure that they sense is coming (Thompson 2007, p. 63). Strong or metaphysical emergence must be distinguished from *weak emergence*, which holds that the novelty in question is simply a consequence of limitations in our current epistemic state and predictive sciences (cf. Bedau 1997⁵). The weak emergentist holds that more sophisticated mathematics and sciences might (and perhaps one day will) accurately predict the orientation and behaviour (micro and macroscopic) of the convection rolls in boiling water. How that might work in regard to mentality *per se* is admittedly more difficult to comprehend, but the naturalist-cum-physicalist will argue that we should be optimistic on this score, while those of non-naturalist persuasion insist that there are constitutive differences between mentality (as experienced, say) and physicality, which mean that the former cannot be comprehensively explained by, or ontologically reduced to, the latter.

2 Embodied Cognition and Emergence

While Chalmers, Nagel, Jackson, and others, have provided direct arguments against physicalism in philosophy of mind, there is another influential body of work that often appears to either explicitly or implicitly contest physicalism, at least if physicalism must be accompanied by reductionism as many think (Kim 1999; Hohwy and Kallestrup 2008). In short, contemporary theorists of enactivism and embodied cognition argue that the bodily organism interacts with its milieu in complex and dynamic ways that preclude any neurobiological reduction, for example, and it is this anti-reductionism that is also part of some phenomenology of the body, as we will see. The justification for claims like this is usually not strictly *a priori*, involving appeal to thought experiments and intuitions about metaphysical possibility. Indeed, they are unsympathetic to arguments from qualia and zombies that have often motivated resistance to naturalism (cf. Thompson 2007, p. 230). Rather, the arguments for these conclusions are typically hybrid in nature, involving transcendental reflection (e.g., Rowlands 2010), but also prosecuted in engagement with empirical work, and at least partly constrained (or “enlightened”, to put it more positively with Shaun Gallagher) by the results of our best and

⁵ Bedau argues that the paradigmatic cases of emergence in natural science are about weak emergence (our epistemic capacities as predictors) rather than any strong metaphysical conception.

future sciences.⁶ They are committed to the idea of the moving and intelligent body inhabiting and moulding its environment in dynamic ways that involve “continuous reciprocal causation” (Wheeler 2005), as well as the idea (from phenomenology) that experience remains “a guiding thread”, as Francisco Varela puts it (1996, p. 334). *Prima facie*, both of these commitments are difficult to accommodate within the reductive and decompositional treatments that are the *modus operandi* of many research programs in the relevant mind sciences. Although they are sometimes motivated by scientific findings, central ideas in embodied cognition are difficult to operationalise as part of an orthodox scientific program. Science typically requires controlling for variables, keeping certain parameters stable but varying others, in order to determinate what part (of the neural system, say) is playing the main causal or functional role. But if continuous reciprocal causation between brain-body-environment is pervasive, then this ambition is significantly complicated. Indeed, on such a view we might expect crises concerning the reproducibility of experiments, precisely because of this complexity.

Consider, in this light, the key claim of embodied cognition: that cognition is embodied. It may appear a truism. But as with many contentious philosophical theses it allows of a strong and controversial reading as well as a weaker but more trivial interpretation. The strong reading holds that certain kinds of embodied action constitute intelligence; on weaker readings the body merely causally or functionally accompanies cognition or intelligence, perhaps as its necessary causal precondition but usually with no such claim made. Indeed, it might even be said to be a fallacy to confuse these two claims, the causal level of the body being involved (which is hard to deny), and the constitutive claim that the intelligence or cognition literally *is* the bodily movement or the performance, with oft-cited examples being the sports-player who is “in the zone”, or the Tetris player who expertly “toggles” despite apparently no time to mentally represent the tiles and their possible permutations and combinations (Clark 1997; Menary 2010). If it is held that bodies and environments, as well as brains, are constitutive parts of at least some cognitive acts and intelligent behaviour, the view seems to involve a commitment to emergence, and Andy Clark and Susan Hurley admit this. The combined interaction of bodies, brains, and environments enables the development of new cognitive capacities that are, it is claimed, inadequately understood via any reductive neurological account that extracts information from an input or

⁶ They are hence minimally naturalist positions, with some overlap with weak, relaxed and “liberal” naturalisms (cf. DeCaro and Macarthur 2010). That said, there are some differences. See Gallagher’s response to David Macarthur in his “Reply to critics” (2018). Gallagher emphasises an integrationist approach, which we might also call a “best fit” approach to philosophy, and contrasts this with Macarthur’s worries that this kind of position blurs the philosophy and science distinction unduly.

stimulus, the latter of which is conceived of as external to the system/agent (Clark 1997, p. 84). Proponents of embodied cognition are hence liable to predict that the empirical success of modular or reductive treatments will be partial and limited, due to the difficulty such approaches will face coming to terms with dynamic “circular causation”, “system causation”, “continuous reciprocal causation”, “affordances”, etc. Whether or not those empirical difficulties are intransigent or temporary stumbling blocks is hotly debated, but these theorists often draw on phenomenologists of the body in their work, notably Merleau-Ponty who argues there is “knowledge in the hands” in his *Phenomenology of Perception* (2013).

At the same time, the proponent of embodied cognition faces the metaphysical concern that any positing of emergent properties and processes contravenes norms of naturalism regarding the causal closure of the physical (Hurley 2001). How exactly does continuous reciprocal causation work, if the structure or system is not just caused by the micro-physical properties or parts, but in turn influences/causes those same parts? Is an epistemic/methodological commitment to reduction part and parcel of any adequate explanation? Indeed, it might be thought that to explain a higher-level phenomenon, rather than simply to describe it, just *is* to reduce it to the workings of simpler, component parts.

As such, the theorist of embodied cognition confronts a dilemma, which is both metaphysical and epistemic, and also concerns their inter-relation. Just how novel and unpredictable are the embodied skills and capacities that we acquire in interaction with our environment? Are they able to be understood on a neuro-centric model, or on a model of nature involving interacting parts or entities, a view of nature as *partes extra partes*? Or, does the body-brain-world system form a dynamic and relational complex, perhaps with feed-back and feed-forward “loops” that (necessarily) stymies all forms of reductionism? As would be apparent, necessary claims concerning the connection between embodiment and cognition, and the inability of any decomposition approach to capture this connection, involve a commitment to epistemic *and* metaphysical emergence. They hold that any reductive explanation in terms of parts of the organism (e. g., input–output accounts involving brains, perceptual stimuli, etc.), and their functional interaction with an environment will *necessarily fail* to capture key dimensions of the embodied intelligence in question. Such a claim may be justified in local cases, often at least partly on the basis of empirical findings, but philosophers making any more global argument to this effect (or presupposing it) are pushing against the naturalist orthodoxy, which denies the necessitarian tenor of such reasoning and generally pursues reductive explanations rather than emergent ones (cf. Hohwy and Kallestrup 2008). We will look at some related arguments in phenomenology of the body and enactivism below, which appear to implicitly embrace emergence.

But to return to the ostensible dilemma, theorists of embodied cognition might hence choose to endorse weaker claims and epistemic emergence (cf. Clark 1997). Perhaps the putative novelty of these holistic body-brain-environment structures is merely epistemic, about the limits of our current understanding and our current sciences, rather than involving any strong metaphysical claim to irreducibility. Perhaps actual occurrences of strong embodied cognition (where the action genuinely constitutes the cognition) are rare. Perhaps occasions of embodied cognition do not have any “grounding” relationship to other forms of cognition and intelligent behaviour (i. e., reflective, propositional, mathematical). But these weaker approaches to embodied cognition risk any distinct philosophical agenda that might constitute a “new science” (Rowlands 2010). They become difficult to distinguish from some of their notional opponents, including functionalist or computationalist accounts of the mind and intelligence, as well as more recent Bayesian-inspired accounts of predictive coding and error minimisation for which the brain as inference engine is the key unit of analysis and that remain more internalist than externalist, at least in some versions (e. g., Hohwy 2013; but, cf. Clark 2013). As such, the issue of emergence seems important to answering the question of just how radical embodied cognition should be, as well as to the associated question of its compatibility with predictive processing accounts of the mind that usually favour a more moderate construal of the extent to which that cognition is literally “out of our heads”.

3 Phenomenology of the Body and Emergence

But what of phenomenology of the body? Phenomenology is not involved in precisely the same game as either philosophy of mind or the empirical research involved in cognitive science. Rather, phenomenology is primarily concerned with description, and only secondarily and implicitly with argument and explanation.⁷ However, despite the ostensible metaphysical neutrality and the eschewal of any

⁷ The aim of phenomenological description is expressed in various ways: e.g. to “let that which shows itself be seen from itself in the very way in which it shows itself from itself” (Heidegger, *Being and Time*); or, to cite Husserl’s principle of all principles, that “everything originally ... offered to us in ‘intuition’ is to be accepted simply as what it is presented as being, but also only within the limits in which it is presented there” (Husserl, *Ideas*, 24). Nonetheless, description does not exhaust what goes on in phenomenological writings. In practice, the central texts of the usual suspects are much more a methodological mix, and for all of them there remains the question of the dialectical motivation for doing phenomenology (whether in general or in a specific case), which involves argumentative premises, even if they are tacit.

argumentocentric approach to philosophy, I think that a version of this emergence dilemma also crops up in many phenomenological writings about embodiment.⁸

To show this, let me begin where phenomenological reflection on embodiment usually begins, since Husserl's *Cartesian Meditations* – with a differentiation between *Leib* and *Körper*, sometimes translated as flesh and body respectively, but often captured as the difference between the lived-body as experienced by us subjectively, and the physical living-body (the body as material object). *Leib* captures the sense in which we are generally with our bodies in action, and not usually needing to deliberately reflect on the position of our limbs, say when grasping a mug or getting up from a chair. This experience of the body in action is different from an objective or allocentric account of that body in space as *Körper*, as well as from the access of other people to that body. Some key features of our embodied life depend on this differentiation, and perhaps constitutively or necessarily so, in that it is hard to conceive of the experience and the perception of depth, for example, without this “zero point” as Husserl puts it, the lived perspective of a given body-subject.⁹ At the phenomenological level the basic idea is that our lived experience of embodiment gives us a “here” and a “now”, along with an array of environmental availabilities that are the basis for the kind of meaningful equipmental nexus that Heidegger famously outlines in *Being and Time* and terms being-in-the-world: in short, the kind of pre-reflective intentional connection that obtains between hammers, nails, doors, given a certain project (e. g., fixing a door). In many cases this lived body is experienced as the background for our perception and action rather than something that we directly attend to: it is a being-with our bodies as an integrated whole. Descriptively, this seems to capture a key aspect of our embodied lives, at least when things are going relatively smoothly and if we are not especially stressed or self-conscious. But the question that needs to be addressed concerns the modal and metaphysical status of the putative contrast with *Körper*, and how we are to understand this difference between phenomenological descriptions of embodiment and accounts of the cognitive and neuro-biological structures that causally enable it.

After all, phenomenologists often claim a certain kind of priority for *Leib*, both as the genetic condition for any subsequent analysis of *Körper* and also concerning the irreducibility of *Leib*. We have an asymmetry posited here, and one which is not transitive. To put the point succinctly, we might say that the lived experience of the body enables an empirical inquiry into the living body, but what is revealed qua *Körper* (e. g., by sciences of the body) cannot adequately explain *Leib* (for

⁸ Much of what follows in this section develops claims in Reynolds 2018.

⁹ We would need to consider the details of various pathological and anomalous cases of embodiment too, but see Gallagher (2005).

exposition of this point in regard to Husserl and Helmuth Plessner, see Wehrle 2019). This is not just a description of a phenomenological distinction, then. When it is framed like this, it is the beginning of an argument to the effect that empiricist projects, and projects of reduction to smaller and perhaps even micro-physical component parts (cf. Wilson 2004), cannot portend to exhaustively encompass the higher-level holistic phenomena of embodiment, without being “hypocritical”, “naïve”, or “presupposing” that which they are meant to be explaining (e. g., the holistic unity of embodied agency). Many phenomenologists subscribe to versions of these sorts of claims, perhaps Merleau-Ponty more than Husserl, but they are fairly pervasive. Indeed, they appear axiomatic, almost. But the question is whether they also thereby limit or simplify current life-sciences of the body, and whether there is a hidden dualism (epistemic or metaphysical) in this distinction, common as it is, between being and having a body.

The dialectical contrast with the naturalist helps to make this clear. Why, they might ask, should we think that the sciences of the body are somehow beside the point when it comes to the lived-body? Presumably there is some relation, even if this is not the phenomenologist’s primary interest. Is this also the case with animal bodies? All human bodies? What is it about these bodies that are different from other physical bodies, to reconsider physicalism and the idea of the causal closure of the physical? Simply retreating to the norms of the phenomenological method is arguably not dialectically adequate, since the method is part of what is here in question. The phenomenologist needs to make clear why an account of *Körper*, living bodies, will be missing anything and why focussing on it alone involves a one-sided and partial account of embodiment that is explanatorily impoverished. It cannot be just that we are “first” with our bodies, genetically or developmentally, since it is not clear to what extent this hold developmentally, even if there appears to be empirical evidence regarding a basic proprioceptively grounded “mineness” about experience (cf. Gallagher 2005), and genetic priority does not in itself establish irreducibility.

One possible argument to this irreducibility conclusion appeals to a dualist intuition, whether that is explicitly recognised or not. We might think that any putative reductive explanation (neuro-biological, say) is just too different in kind from the explanandum, from that experience that the phenomenologist has described. In other words, we have an experience of acting in the world as embodied agents, a “what it is like” associated with our coping with the world in a practical way that is anchored by our embodiment, and we cannot conceive of how it might be associated (through causal covariance, correlation, etc.) with any treatment of the body as living thing, as an object (since it is the body as subject we are concerned with). This kind of subject–object split appears at least methodologically or semantically dualist, and there are questions about whether it also

slides into metaphysical dualism too, as has been suggested of Nagel and Chalmers's famous arguments (cf. Godfrey-Smith 2016). But it is perhaps enough, for now, to simply agree with Thompson (2007, p. 235) and say that if we reify this distinction between *Leib* and *Körper* into two metaphysically irreducible properties or aspects then we create problems reminiscent of those that face the classical mind-body problem. That is, we create a body-body problem. As philosophically significant as this distinction between *Leib* and *Körper* is for helping us to place in question mechanistic construals of the body, it *can* also license stronger conclusions than any strictly neutral phenomenological description might countenance. Thompson hence advocates that we think of one typology of embodiment (2007, p. 237), which has a diversity of manifestations that are more and less directly accessible through experience. This is indeed an improvement, but it returns us to the basic problem around which this paper has been oriented. If we agree with Thompson that there is in fact an identity that obtains such that the “lived body is the living body” (2007, p. 237), this certainly complicates any metaphysical claims about irreducibility. How can one be irreducible to the other, if they are in fact identical? This is the dilemma posed by physicalism and emergentism that Thompson addresses in his “Appendix” to *Mind in Life* (2007, pp. 417–41).

Although Thompson does not make this claim, there is also a phenomenological issue concerning the putative contrast class. It is arguable that we have no *experience* of our own bodies qua *Körper*, in accord with phenomenological principles, if this means an experience of our bodies as a mere object in a presentive intuition. If that is so, then the distinction might be a metaphysical posit from the very beginning, as Claude Romano contends (Romano 2016, p. 521). Of course, phenomenologists have quite a lot of important things to say about our experience of the body qua *Körper*. They rightly discuss our access to the body of others in perception, and our experience of our own body in a mirror and as objectified by other people in what Sartre calls the Look. Perhaps most importantly for the question of phenomenological access to the body as *Körper*, however, are situations of “break-down” when our body is experienced less as something that we are (and is therefore inconspicuous and in the background) and more directly as something that constrains us and is conspicuous to us. But is this an experience of the body as object? When we experience our bodies as objects in this weak sense (i. e., our embodied straining, fatigue, pain¹⁰), it is still from a perspective that is not itself objectified but is our condition of experientiality. This transcendental construal of embodiment might seem to secure the conclusion the phenomenologist is after – the priority and irreducibility – but it is not clear that it does. “For

10 A more detailed account of this would need to attend to experiences where we lose control of aspects of our own embodiment, like the “locked in” and “anarchic hand” syndromes.

us”, of course, we are embodied subjects, but we need additional premises to argue for any irreducibility or priority of *Leib* in regard to *Körper*, and strict phenomenological description does not seem to provide this.

If we do not want to supplement the phenomenology by appeal to intuitions that derive from metaphysical dualism, how else might we establish a priority or irreducibility of wholistic embodiment in regard to aggregative or decomposition treatments in the life sciences, say, that focus on the body as a living system? We might proceed through considering mereology as Husserl does in some of his writings (e.g., in the *Logical Investigations*), which in the analytic tradition is usually thought to involve theses of supervenience rather than emergence. But another way in which this argument is pursued in phenomenology of the body, especially after Husserl, is by maintaining that there is something new and emergent at the level of *Leib* that is surprising, given just an analysis of *Körper*. This is often implicit rather than explicit, but it appears to be what is at stake when Ted Toadvine notes, I think correctly, that Merleau-Ponty contends that there are “original and irreducible properties inexplicable at the physical level” (Toadvine 2009, p. 82). “Originality” here is akin to emergentist talk of “novelty”, and it is a novelty that cannot be comprehended via any aggregative, decompositional or homuncular focus that is exclusively on the interaction of the parts. Again, I am not claiming that phenomenologists are expressly interested in the so-called “hard problem” of consciousness, or the emergence of mind from matter. Rather, my point is that these sorts of claims regarding the priority and irreducibility of *Leib* qua *Körper* (and cognate distinctions) appear to presuppose a structure of argument that aligns with Mitchell’s three features of emergence: “novelty, unpredictability and the causal efficacy of emergent properties or structures”.

If this is right, this is more promising territory for theorists of embodied cognition and for empirically-minded phenomenologists who want to forge a middle-way between naturalism and non-naturalism. Nonetheless, we have seen that we need to discriminate between strong and weak emergentism, metaphysical and epistemic. We also need to consider whether or not the emergentist middle-way ultimately ends up collapsing into non-naturalist dualism or physicalism, as with the dilemma outlined above. The phenomenologist could embrace an emergentist metaphysics to help justify the claims of priority and irreducibility, or they might simply hold that *Leib* and associated phenomena are currently unpredictable in regard to our best sciences of the living body. If so, they may not be committed to metaphysical emergentism, but it means that the phenomenologist of embodiment cannot remain outside of the empirical fray, even if they are rarely simply falsified by such findings. Perhaps the arguments are based on impoverished understandings of biology and neurobiology. If so, the arguments will be suggestive, at best. Even if they are based on a strong understanding of the relevant

neurobiology, any conclusions will be contingent upon a given methodology and/or approach employed by this or that research program.

It is not just the *Leib/Körper* distinction where these epistemic and metaphysical questions arise. Consider embodied intentionality, and the ostensible irreducibility of online embodied cognition associated with practical “know-how”. These arguments can be found in contemporary embodied cognition but they also have phenomenological precedents. Such know-how is primarily given in an embodied manner in which one practically knows how to ride the bike, grasp the hammer, or play the piano with “knowledge in the hands” in Merleau-Ponty’s example (2013). This mode of knowing and inhabiting the world is contrasted with third-personal “knowledge-that” (knowledge about objects that is abstracted from a particular first-personal engagement with it), and it is also often held by phenomenologists to be the latter’s condition. We might try to imitate our parent’s capacities to ride a bike, but there is an intuitive sense in which any third-personal instructions or propositions will miss something significant about the skilful performance of these embodied activities, especially where one seeks expertise and flexibility within a non-closed system/environment. This know-how or “*l’habitude*” as Hubert Dreyfus puts it in various places, is not merely a routine or program, since one needs to navigate between attention to global aspects of performance and the details of execution of specific motor control, and it also must allow for a dynamic and changing environment. A skill and practical knowledge is attained that is not reducible to a series of rules that might be programmed in a computer, nor internalized as mental representations and followed by the competent, and it is in that sense emergent in relation to them. While this might be claimed to hold for embodied experience simpliciter in a manner akin to qualia (Chalmers 2006), the argument appears strongest in regard to embodied expertise (phronesis) within a particular environment or niche, where the skills that we have depend on the specificities of complex interactions between body, brain, and world, and such skills are surprising given even a thorough understanding of the parts understood in an aggregative or linear way (McGivern 2014).

This know-how is tightly tied to bodily habits and what Merleau-Ponty called “motor-intentionality”. It places pressure on a number of classical dualisms like mind and body, consciousness and thing, nature and culture, etc. Indeed, Mark Wrathall suggests that this embodied space of motivations constitutes a “third-term” that disrupts all forms of dualism, perhaps most notably between causes (naturalism) and reasons (non-naturalism). As Wrathall puts it:

... instead of mind and matter, the lived body; instead of causes and reasons, ‘motives’. A full account of this disruption would require that one show how so-called motor intentional behavior, together with much of our experience of the world, is *not reducible* to a purely physical event, nor commensurable with mental predicates (my italics, Wrathall 2005, p. 112).

This bodily “third-term” idea can be extended to animals who have a life-world (contra Heidegger), and perhaps also living systems in general with autopoietic versions of enactivism (cf. Thompson 2007). And it is important to note the structure of the argument, here. These motor structures/capacities are said to depend upon, but not be reducible to, the parts considered in an aggregative manner. If that were not so, it is not clear why reasons and causes would not suffice, why empiricist and intellectualist efforts fail at *both* the descriptive and explanatory levels. An explanation for this, albeit one that is not strictly part of the phenomenological descriptions, might be that there are feed-back and feed-forward loops between higher and lower-level processes, i. e., the kind of structural or circular causation we saw in regard to convection rolls and embodied skills. As such, there appears to be a kind of emergence presupposed here, whether it is an epistemic/methodological claim that the body as holistic structure is not adequately *understood* in mechanistic or modular terms (weak emergence), or whether it involves an ontological account of (strong) emergence. As we have seen, weaker claims are contingent rather than necessitarian in character. They are tied to whether or not a particular way of approaching a problem (e. g., modelling real-time flexible intelligence) will be empirically successful, given this or that set of assumptions and methodological approach. Phenomenologists of the body who endorse this approach cannot rule out, in advance, the variety of differing potential reductionist programs, both present and future. At the same time, proponents of stronger claims to necessity (i. e., the claim that there is an embodied “third-term” that necessarily cannot be comprehended by standard accounts of mind and body) need to show how they are not committed to a kind of embodied mysterianism where that which emerges from the dynamic causation becomes so novel and unpredictable that we are faced with something like the hard problem of consciousness, albeit this time as a “body–body” problem as Thompson calls it (2007, p. 235).

There is another idea that phenomenologists have drawn heavily on that invokes considerations related to emergence: the body-schema, which Merleau-Ponty discusses at length in *Phenomenology of Perception*. While the *body-image* refers to perceptions, attitudes, and beliefs about our body, the *body-schema* is tied to a pre-reflective sense of where our bodies are in space and the affordances presented for action (cf. Gallagher et al 1998, p. 54), which is largely not directly phenomenologically attended to, but shapes and constrains us through motor skills and habits. Again, there is a holism about the body-schema and its global bodily awareness that is important to Merleau-Ponty’s contention that empiricist accounts will miss something about it, insofar as they are atomistic in orientation. As Merleau-Ponty puts the point, “my entire body is not for me an assemblage of organs juxtaposed in space. I hold my body as an indivisible possession and I know

the position of each of my limbs through a body-schema that envelops them all” (Merleau-Ponty 2013, pp. 100f.). This is a claim about the lived-body as it is “for me”, but it is not only that. It is also bound up with a claim that we can neither comprehend nor explain this through an aggregative or empiricist approach to the body-schema. Merleau-Ponty’s most detailed case-study of this draws on Schneider and the injuries he suffered during World War 1, as examined by Adhémar Gelb and Kurt Goldstein. Without being able to do justice to Merleau-Ponty’s rich and complex discussions regarding Schneider, considerations to do with emergence seem to be doing at least some of the “heavy lifting”, especially concerning the idea of the body as “indivisible possession” and the role of the body-schema as eliding empiricist construals because it “envelops them all”.

Contemporary theorists of embodied and enactive cognition make related claims concerning the capacity of reductionist programs in neuroscience to capture this bodily subjectivity that is grounded in the body-schema. In brief, any putative reduction aims to establish that that which is reduced is nothing over and above that which it is reduced to (Smart 1959, Hohwy and Kallestrup 2008), with neuro-biology providing the main candidates for reduction. But Thompson, for example, argues that it is this intrinsic bodily awareness (which he insists is not equivalent to awareness of the body as an object) that must be explained by any scientific account of consciousness that is functionalist or neurologically oriented: “... it *must* account for the ways in which one’s body is intentionally directed towards the world, and it *must* account for a form of self-awareness that does not imply identification of one’s body as an object” (Thompson 2007, p. 252). For many of the weaker renderings of embodied cognition, by contrast, it is only “body representations” in the brain that are acknowledged to be necessary for cognition (cf. Goldman and Vignemont 2009, p. 155). With these views reduction to more basic neuro-biological properties remains a possible and (often) desired goal, one that also accompanies a more internalist picture of the mind instantiated in the brain. On the stronger emergentist view, however, the emphasis on embodiment extends into the world more radically. The body-schema is not merely an inner proprioceptive sense, but is also extended and integrated within its environment (Gallagher 2005, p. 38). The proprioceptive loop is also always accompanied by an exteroceptive “motor loop” that extends from brain to body and environment (Thompson 2007, p. 368), with exemplary cases including the blind man’s cane, along with more mundane and everyday scenarios of skill acquisition (e. g., driving a car, playing piano, etc.) that we are familiar with. Again, however, we appear to confront a version of the emergence dilemma. More radical approaches to embodied cognition embed a holistic account of the body-schema fully into the world *and* into the external environment. The structural coupling

that obtains between the terms of the relation look like a commitment to meta-physical emergence, perhaps especially if accompanied by a denial of the viability of any and all reductionist construals. Weaker treatments of embodied cognition, by contrast, can accommodate naturalist scruples about emergence but fail to fully capture all of the key insights (empirically motivated and otherwise) of embodied cognition.

4 Merleau-Ponty and the Structure/Gestalt of Behavior

Much of the previous section has outlined some central ideas in circulation in phenomenological writings on embodiment, which I have compressed from the extant literature. Some of the key ideas have been drawn from Merleau-Ponty's influential writings, and I have suggested that there is an implicit commitment to emergence there. It is worth, however, more directly discussing Merleau-Ponty's philosophy, especially because some related ideas concerning holism and emergence are more explicitly put forward in his earlier book, *The Structure of Behavior*, especially in regard to its two key concepts – form and behaviour. Consider the two following remarks from Merleau-Ponty, noting the italicised passages:

Form, in the sense in which we have defined it, *possesses original properties with regard to those of the parts which can be detached from it*. Each moment in it is determined by the grouping of the other moments, and their respective value depends on a state of total equilibrium the formula of which is an intrinsic character of “form” (Merleau-Ponty 1965, p. 91/101, my italics).

And:

... from the moment behavior is considered “in its *unity*” and in its human meaning, one is no longer dealing with a material reality nor, moreover, with a mental reality, but with a *significant whole or a structure* which properly belongs neither to the external world nor to internal life (Merleau-Ponty 1965, p. 182/197, my italics¹¹).

In these passages Merleau-Ponty's language and arguments directly invoke emergentist reasoning, as has been noted by Thompson (2007, p. 66). Merleau-Ponty also makes these same claims in regard to life, agreeing with the emergentist that it is not a force that is added to physico-chemical processes (Merleau-Ponty 1965, p. 202), which was the emergentist concern in regard to vitalism. This

¹¹ These references in *Structure of Behavior* were both pointed out to me by Dimitris Apostolopoulos.

connection between emergentism and a philosophical rendering of Gestalt psychology is perhaps not as surprising as it may appear. The Gestalt idea of a form or structure of behaviour indicates something that has structure but which defies analysis in terms of its component parts. And while the body is not the focus of *Structure of Behavior* in the way it becomes in *Phenomenology of Perception*, it is presupposed in Merleau-Ponty's account of the dynamic behavioural relation between organism and its milieu, which he contends cannot be adequately understood by any simplistic behaviourism (e. g., Watson's) nor by intellectualism.

Indeed, we have already seen that this emergentist/Gestalt framework continues to play a role in the *Phenomenology of Perception* concerning embodiment, motor-intentionality and know-how, and the body-schema. It also seems to be apparent in Merleau-Ponty's criticism of the use and abuse of the idea of "sensation", especially atomistic and empiricist construals of it that have been influential in both philosophy and psychology. As he puts it:

If we think back to the objective investigations themselves, we discover first that the exterior conditions of the sensory field do not determine it part by part and only intervene by making an autochthonous organisation possible – this is what Gestalt theory shows – and second, that structure in the organism depends on variables such as the biological sense of the situation, which are no longer physical variables, such that the whole escapes the well-known instruments of physico-mathematical analysis and opens onto another type of intelligibility (Merleau-Ponty 2013, p. 11).

In the *Phenomenology of Perception*, then, it is not just the discussions directly concerning embodiment, but also Merleau-Ponty's more general "middle-way" between an analysis of strictly physico-mathematical variables and intellectualism, which is closely related to our earlier definitions of emergentism. The idea of autochthonous organisation, for example, seems to involve theses of both dependence on physical variables, as well as distinctiveness and a level of autonomy in regard to those variables (especially in regard to sense). In his later work (e. g., his *Nature* course notes), Merleau-Ponty gives more attention to anatomy, biology, embryology, and dynamic morphology, and he (or at least the student notes that transcribe these lectures) references emergence in his discussions of morphogenesis in the work of George Coghill and Arnold Gesell (Merleau-Ponty 2003, p. 145/194; see also Morris 2018). In this period of his thought he also emphasises the *Ineinander* or intertwining of life and physico-chemistry, and of animality and nature.

This emergentist strain in Merleau-Ponty's thinking has had relatively little attention in the literature (except Thompson 2007; also see Toadvine 2009), no doubt due to the view that phenomenology, and especially transcendental phenomenology, cannot have any truck with emergence. But I think Merleau-Ponty recognised that this antithesis, including that between phenomenology and naturalism, was a

simplification (for more on this, see Reynolds 2018, chapter 4), declaring in the *Structure of Behavior* that there is “a truth in naturalism”. While scholars have debated the extent to which Merleau-Ponty is committed to both transcendental philosophy and transcendental phenomenology, given the transformations he makes in regard to the Kantian and Husserlian conceptions of each (e. g., Inkipin 2017; Matherne 2019), further consideration of the connection between his transcendental philosophy and his emergentism may help to further nuance those questions.

For now, however, let us simply compare these remarks from Merleau-Ponty with some related formulations in the work of the “British” Emergentist, Samuel Alexander, who was actually Australian born and educated. In a now classical statement of emergentism, Alexander says:

Physical and chemical processes of a certain complexity have the quality of life. The new quality life emerges with this constellation of such processes, and therefore life is at once a physico-chemical complex and is not merely physical and chemical, for these terms do not sufficiently characterize the new complex which in the course and order of time has been generated out of them. Such is the account to be given of the meaning of quality as such. The higher quality emerges from the lower level of existence and has its roots therein, but it emerges there from, and it does not belong to that level, but constitutes its possessor a new order of existent with its special laws of behaviour (Alexander 1920, pp. 46f.).

Now, it is true that Merleau-Ponty usually avoids the talk of lower and higher levels that Alexander deploys in this passage. Nonetheless, if we replace the term “quality” with “sense” or “structure”, the overlap is significant. In both cases, these emergent structures present a challenge to physicalist reductionism and to any non-naturalist opposition. In both cases, the contention is that these structures and behaviours have an unpredictability and novelty that cannot be adequately grasped by compositional explanations.

If there are strongly emergent phenomena – like *Leib*, form, behaviour, and embodied know-how – and if these cannot be adequately grasped by the standard approaches in our contemporary sciences of the mind, then we are faced with a choice. Either our understanding of nature (and/or science) needs to be revised to accommodate them, or we need to argue that something is beyond its ken. Lynne Rudder Baker makes the second move in her critique of scientific naturalism (2013), and so perhaps do some proponents of liberal naturalism who endorse ontological pluralism (Staiti 2016) and prefer to retain an austere conception of naturalism and the physical that is in no way re-enchanted. Like enactivists, however, I favour incorporating the ostensibly recalcitrant phenomena within an expanded and revised conception of science and nature, where supported by relevant philosophical and scientific reasoning. But this remains an ambitious project. It might be accused of re-enchanting nature, and it has a (re)visionary aspect in regard to

contemporary scientific practice, rather than advocating piecemeal tinkering within orthodox approaches. It is thus important to get clear on the scope of these ambitions and the extent of the commitment to an emergentist world-view.

5 Shaun Gallagher's Emergentist Enactivism

If embodiment is a key theme in embodied cognition, this is only deepened by enactivism, which stresses the role of embodied action even more heavily. In terms of the role of emergentist reasoning in this tradition, Thompson has done important work on this question (2007) but it arguably plays a role in enactivism more broadly, although this is not often explicitly recognised. Without being able to consider all of the varieties of contemporary enactivism here, I want to consider a recent essay by Shaun Gallagher that broaches many of the issues with which we have been concerned, albeit without ever explicitly mentioning emergence (2018). Gallagher's essay on the possibility of non-reductive cognitive science considers some difficult cases for the reductive approaches that he associates with classical views of nature and science. Those difficult cases are the situational specificity of embodied cognition and affordances at the macro-level, and quantum mechanics at the micro-level. To focus on the macroscopic, Gallagher argues that embodied affordances are relational and holistic, and embedded in a situation. Tying affordances to the phenomenological apprehension of what Husserl and Merleau-Ponty call an "I can" – that is, our bodily interaction with objects in terms of what we can do with them, which is typically pre-reflective – Gallagher contends that in our skilled interactions with environment we are solicited to respond by environmental cues that enable certain actions and behaviours to show up as salient for us. These depend on the history of our embodied engagement in the world, and that world (in both its visible and invisible dimensions, to invoke Merleau-Ponty) also constrains and delimits our activities by presenting various solicitations to act. These affordances cannot be readily identified with anything "objective" on a physicalist construal (or from a God's Eye view), nor with the deliberate or reflective intentions of a given subject. Rather, they are formed from the ongoing dynamic interaction between both, constituting a motor-intentionality and know-how that involves "brain-body-environment" as a circular system. Throughout his career, Gallagher deploys insights like these to good effect, usually dialectically in regard to particular reductive programs within the contemporary sciences of the mind.

Nonetheless, a version of the emergence dilemma also arises in Gallagher's work that has not been addressed, to my knowledge. Consider the following remark, summarising his core contention in the paper in question:

This relational nature, irreducible to either brain or object, is the nature that science needs to explain. This concept of nature goes together with the idea that the phenomena to be explained are irreducible. Rethinking nature and reductionism in this way, also means we have to rethink science – not just science as it is practiced by the experimental scientist, but our theoretical conception of science, or science as we know it (Gallagher 2018, p. 131).

Gallagher contends, then, that there are various important phenomena that are intrinsically holistic and relational, and which cannot be adequately understood through the decompositional approaches usually endorsed by (cognitive) science. Of course, one might query the latter claim, and press this or that reductionist case. But if the case appears broadly sound, then given that these relational phenomena are not obviously “spooky” but appear vital to understanding intelligence (including animal, neonatal, etc.), there is reason to reconsider what some of our best sciences methodologically exclude from their purview. We might also be motivated to think again about whether or not the normative methodological emphasis on reductive explanation that is characteristic of orthodox naturalism derives from a tacit metaphysical position regarding nature.

Gallagher’s position is sometimes framed in terms of a transcendental argument. We have a claim about embodied agency at the macroscopic level (that it is complex and holistic; intrinsically embodied, embedded, and enactive) and we conclude that for that phenomena to be as it is, nature must be different from how we standardly conceive of it. Of course, the capacity for transcendental reasoning to validly derive metaphysical conclusions from subject-involving states of affairs is much debated, but rather than any strict transcendental argument in the Kantian or Husserlian vein it seems to me that Gallagher’s argument (like Merleau-Ponty’s) overlaps substantially with emergentist reasoning. As Gallagher puts it, in a manner reminiscent of Alexander, Broad, and others:

Like the quantum in quantum physics, the organism in biology, if not life itself, appears to be both the starting point and “the irrational element” from the point of view of classic naturalism. It’s where the *partes extra partes* conception of nature fails (Gallagher 2018, p. 128).

While the British emergentists were focused on the biology and chemistry of their times, and the question of the reducibility of principles or laws, Gallagher’s holistic focus is on the active bodily organism as the key explanatory entity, in contradistinction to any reductive approach to the body that is decompositional – i. e., genocentric in biology or neurocentric in cognitive science. As he puts it:

to the extent that the classic behavioral and cognitive sciences attempt to regard the subject as one object among other objects, to reduce the embodied agent to a set of computational-neuronal processes that can be analyzed in terms of physical reality or nature, they not only

miss something important, they frame their explanations in the wrong way (Gallagher 2018, p. 128).

Here Gallagher appears to make a claim of conceptual error, a kind of “category error” accusation with the idea of being “framed in the wrong way”. If we want to understand the embodied mind, this is just not the way to do it. The implication appears to be that no matter how sophisticated the sciences of living bodies (*Körper*) might become, they will be unsatisfactory qua subjectivity and lived embodiment. But if this argument does not rest on the claim that if we treat the subject as an object then we will not understand what it is like to be a subject, a position that sounds a little like Nagel and dualism as we discussed earlier, then further argumentative resources are needed.

In his broader body of work, Gallagher deploys insights like these to perform an often powerful dialectical critique, showing how neuro-computational analyses, for example, either presuppose or have something to say about embodied agency in a more holistic sense despite their own claims, and/or that where they do not (e.g., where they make good on their reductionism), it nonetheless creates internal problems for the views in question, problems that they might be brought to recognise on their own terms too. But it is worth noting that to diagnose problems (even accurately) does not show that these problems are necessary or inevitable in the future, unless we have reasons for thinking the future will be much the same as the past. Gallagher is able to arrive at his revisionary conclusions regarding the need to rethink scientific practice because he contends there is a view of nature, and a normative account of what is required to explain nature (i.e., reduction, “smallism”, etc.), that has endured for a long time.

But in prosecuting this argument Gallagher borrows from Merleau-Ponty’s emergentism in places (2018, p. 130), and his own position might also be interpreted as hinging on the claim that affordances, and quantum mechanics, are strongly emergent: that is, the interaction and structural causation of our cognitive and motor systems with our environment involves genuine novelty and unpredictability, more than merely the contingent novelty that derives from our imperfect sciences and our current methods of garnering knowledge. True, the emergence in question is surprising only against the background of the classical view of nature, and resultant scientific and philosophical programs that aim for reduction. As such, the scope of the alleged irreducibility is limited, at least a little. It seems that Gallagher is thus committed to a version of epistemic rather than metaphysical emergence, albeit of a “strong” variety (to complicate our earlier terminology), since it promises to overturn something like a scientific paradigm and the classical view of nature. We might argue about how pervasive and universal that paradigm is. Nonetheless, if we interpret his position as advocating

epistemic emergentism, the argument becomes more abductive in form. We have this or that surprising phenomenon, which we can gloss here as any of continuous reciprocal causation, the “know-how” or motor-intentionality of the lived-body, structural coupling between organism and environment, affordances, etc. Rather than these phenomena being necessarily surprising, or bringing something metaphysically new into the universe, they are surprising only given this or that view of science and nature, along with a view about the nature of explanation and its demands. But if we change our conception of nature from the sort of bald naturalism where the phenomena appear inexplicable to a more nuanced picture, then the phenomena are no longer so surprising. This doesn’t disprove the classical conception of nature, so it is not quite the “category error” style rejection that we are inappropriately treating the subject as an object and thus condemned to failure. Nonetheless, it renders more plausible the effort to articulate other understandings, some of which may be able to be found in scientific practice itself. On this interpretation, this improved picture of the conditions (say an enactivist view of nature) may be likely to be true, or at least more likely than a set of opposing views that are indebted to the classical picture of nature and accompanied by reductionist programs. As such, if we fill in these details we appear to have a warrant to make an inference to a better explanation. Sometimes Gallagher’s position is framed in this way, awaiting future philosophical and scientific inquiry and demanding a broad engagement with our current sciences. I endorse this general trajectory, but also think the issue of emergentism is one that needs to be further clarified in his work.

6 Conclusion

I have argued that embodied cognition, enactivism, and certain uses of phenomenology of the body, rely (implicitly) on emergentist reasoning in regard to claims that the holistic interaction of body and environment is irreducible to reductive and compositional treatments. We have seen that strong claims of irreducibility are tied to strong claims to necessity, often of a negative kind, to the effect that an explication of the parts necessarily cannot comprehend the whole and its “original properties”. Weaker claims regarding the capacity of our current best sciences to come to terms with insights central to embodied cognition are less necessitarian in character, but they also potentially lose the radicality and some of the explanatory power and distinctiveness of those ideas. They leave open the prospect that the independence of the emergent phenomena, including their novelty and unpredictability, may be an artefact of the limitations of current sciences rather than an ontological necessity. I have identified the way in which arguments relating to

certain holistic phenomena (like *Leib*, know-how, body-schema, form/behaviour, affordances, and beyond), are ambiguously situated in regard to epistemic and metaphysical versions of emergence. I have also examined Merleau-Ponty's phenomenology of embodiment and Gallagher's influential version of enactivism. While I broadly endorse their positions, I have also argued that we need to carefully parse their commitments, elaborating less necessitarian construals of the arguments about irreducibility and the kind of emergence at stake. This strategy concedes there is something important to naturalist scruples about emergence, but without taking that to have the consequences that are usually thought to be entailed (i. e., that first-personal accounts of embodied experience are explanatorily suspect). The argument form I favour here is abductive, an inference to what I hope is a better explanation, which requires ongoing engagement with the relevant empirical sciences. At the same time, another possibility is to develop and defend the strong emergentist implications that are present in some of these treatments of the body, drawing on new sciences and new explanatory resources that were not available to the British Emergentists. This might also include arguing against the received view of emergentism and/or outlining new emergentisms that are more diachronic than synchronic (cf. Thompson 2007, pp. 417f.; cf. Kirchhoff 2014). Whichever direction one pursues, resolving some of these modal ambiguities is important to clarifying some significant metaphysical and epistemological issues at the heart of embodied and enactive cognition, and in phenomenology of the body.

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References

- Alexander, S. (1920). *Space, Time and Deity. 2 Vols* (London: MacMillan and Co).
- Baker, L. (2013). *Naturalism and the First-person Perspective* (Cambridge: Cambridge UP).
- Bedau, M. (1997). "Weak emergence," *Philosophical Perspectives* 11: 375–399.
- Carman, T. (1999). "The body in Husserl and Merleau-Ponty," *Philosophical Topics* 27 (2): 205–225.
- Chalmers, D. (2006). 'Strong and weak emergence', in P. Davies and P. Clayton (eds.). *The Re-Emergence of Emergence: The Emergentist Hypothesis from Science to Religion* (Oxford: Oxford University Press).
- Clark, A. (1997). *Being There* (Cambridge, MA: MIT Press).
- Clark, A. (2013). "Whatever next? Predictive brains, situated agents and the future of cognitive science," *Behavioural and Brain Sciences* 36 (3): 181–204.

- DeCaro, M. (2010). 'Emergence and naturalism', in A. Corradini and T. O'Connor (eds.). *Emergence in Science and Philosophy* (London: Routledge), pp. 190–211.
- DeCaro, M. and Macarthur, D. (eds.) (2010). *Naturalism and Normativity* (New York: Columbia).
- Gallagher, S. (2005). *How the Body Shapes the Mind* (Oxford: Oxford University Press).
- Gallagher, S. (2017). *Enactivist Interventions* (Oxford: Oxford University Press).
- Gallagher, S. (2018). "Rethinking nature: phenomenology and a non-reductionist cognitive science," *Australasian Philosophical Review* 2 (2): 125–137.
- Gallagher, S., Butterworth, G., Lew, A. and Cole, A. (1998). "Hand—mouth coordination, congenital absence of limb, and evidence for innate body schemas," *Brain and Cognition* 38 (1): 53–65.
- Ganeri, J. (2011). "Emergentisms, ancient and modern," *Mind* 120 (479): 671–703.
- Godfrey-Smith, P. (2016). "Individuality, subjectivity and minimal cognition," *Biology and Philosophy* 31 (6): 775–796.
- Goldman, A. and de Vignemont, F. (2009). "Is social cognition embodied?," *Trends in Cognitive Sciences* 13 (4): 154–159.
- Hohwy, J. (2013). *The Predictive Mind* (Oxford: Oxford University Press).
- Hohwy, J. and Kallestrup, J. (eds.) (2008). *Being Reduced* (Oxford, USA: Oxford University Press).
- Humphreys, P. (2016). *Emergence: A Philosophical Account* (Oxford: OUP).
- Hurley, S. (2001). "Perception and action: alternative views," *Synthese* 129 (1): 3–40.
- Inkpin, A. (2017). "Was Merleau-Ponty a transcendental phenomenologist?," *Continental Philosophy Review* 50 (1): 27–47.
- Kim, J. (1999). "Making sense of emergence," *Philosophical Studies* 95 (1–2): 3–36.
- Kirchhoff, M. (2014). "In search of ontological emergence: diachronic, but non-supervenient," *Axiomathes* 24 (1): 89–116.
- Matherne, S. (2019). "Toward a new transcendental aesthetic: Merleau-Ponty's appraisal of Kant's philosophical method," *British Journal for the History of Philosophy* 27 (2): 378–401.
- McGivern, P. (2014). "Emergent expertise?," *Educational Philosophy and Theory* 46 (6): 692–708.
- Menary, R. (2010). 'The extended mind in focus', in R. Menary (ed.) *The Extended Mind* (Cambridge, MA: MIT Press), pp. 1–26.
- Merleau-Ponty, M. (1965). *Structure of Behavior*, trans. A. Fisher (London: Methuen).
- Merleau-Ponty, M. (2013). *Phenomenology of Perception*, trans. D. Landes (New York: Routledge).
- Merleau-Ponty, M. (2003). *Nature: Course Notes from the College de France*, trans. R. Vallier (Evanston, IL: Northwestern UP).
- Mitchell, S. (2012). "Emergence: logical, functional and dynamical," *Synthese* 185 (2): 171–186.
- Morris, D. (2018). *Merleau-Ponty's Developmental Ontology* (Evanston, IL: Northwestern UP).
- Reynolds, J. (2018). *Phenomenology, Naturalism and Science: A Hybrid and Heretical Proposal* (London: Routledge).
- Romano, C. (2016). *At the Heart of Reason* (Evanston, IL: Northwestern UP).
- Rowlands, M. (2010). *The New Sciences of the Mind: From Enactivism to Embodied Phenomenology* (Cambridge, MA: MIT Press).
- Smart, J. (1959). "Sensations and brain processes," *The Philosophical Review* 68 (2): 141–156.
- Staiti, A. (2016). 'The relative right of naturalism: reassessing Husserl on the mind/body problem', in B. Centi (ed.). *Tra corpo e mente: Questioni di Confinare* (Firenze: Le Lettere), pp. 125–150.
- Stoljar, D. (2001). 'Physicalism', *Stanford Encyclopedia of Philosophy* (CA, Palo Alto: Stanford UP).
- Thompson, E. (2007). *Mind in Life* (Cambridge, MA: MIT Press).
- Toadvine, T. (2009). *Merleau-Ponty's Philosophy of Nature* (Evanston, IL: Northwestern UP).
- Varela, F. (1996). "Neurophenomenology: a methodological remedy for the hard problem," *Journal of Consciousness Studies* 3 (4): 330–349.

- Wehrle, M. (2019). "Being a body and having a body," *Phenomenology and Cognitive Sciences* Forthcoming.
- Wheeler, M. (2005). *Reconstructing the Cognitive World* (Cambridge, MA: MIT Press).
- Wilson, R. (2004). *Boundaries of the Mind* (Cambridge: Cambridge UP).
- Wrathall, M. (2005). 'Motives, reasons, and causes', in T. Carman and M.B.N. Hansen (eds.). *The Cambridge Companion to Merleau-Ponty* (New York: Cambridge University Press), pp. 111–128.