This is a large book, and large books have to justify themselves more than short ones. Although there are times when I think Evan Thompson could be more succinct, the length of the book is justified owing to the need for the ambitious project the book undertakes to be properly and convincingly realized. Overall, the book is a tremendous success and amounts to a superior contribution to recent and current debates in the philosophy of mind. Thompson displays a deeply impressive grasp of the relevant literature across a range of disciplines, including biology, phenomenology, psychology and neuroscience. Not only has he read widely, he has an admirable intellectual independence, and is confident of the arguments he wants to demonstrate and the direction he wants the sciences of the mind to take. The book provides a highly instructive series of insights into how we have got to where we are in our conceptions of the mind, how these continue to replicate the errors of modern thought (these errors are largely Cartesian), and how the philosophy and biology of life, as well as the sciences of the mind, require the insights of phenomenology if we are to do justice to our understanding of consciousness. None of this would come across as powerfully and persuasively as it does without the tremendous intellectual gifts Thompson has in his possession and that he brings to bear on some of the most important topics confronting both philosophy and scientific inquiry today. These gifts reveal themselves in his impressive mastery of the literature; in his judicious and sober treatment of the different sides that have constructed the core debates for us today, such as advocates of genocentrism and complexity theorists; in the thorough manner in which he exposes real or genuine deficiencies in the arguments and positions of his opponents; and in the comprehensive manner in which he states the case for a phenomenologically-driven science of life and mind. There can be little doubt that owing to his tremendous intellectual skills, he is a reliable guide whom the reader can trust. In fact, he displays at their best and most open the two intellectual virtues that Nietzsche held should inform the most demanding tasks of
modern intellectual inquiry: honesty or probity and modesty. Thompson has a genuine intellectual conscience and his refusal to settle for simple-minded positions is both admirable and inspiring. One cannot sing one's praises of this book enough, and it deserves all the plaudits it will surely receive. It makes a truly invaluable contribution to the philosophy and science of the mind.

Thompson has set himself the task of providing an informed and adequate conception of `mind in life`, that is, of bridging the explanatory gap between mind and life, or between the subjective and the objective, the phenomenological and the physical (ultimately, our attachment to these oppositions is shown to be part of our problem and requires much greater finesse than is commonly done). For Thompson, there is a deep continuity of life and mind: where we encounter life we will find mind in its most articulated or sophisticated forms, and mind belongs to life. This is to pose a challenge both to science and transcendental phenomenology simply because for science life is taken to refer to a strictly external, objective, structural and functional property of physical systems; whilst for phenomenology questions of life can be bracketed out and left to physicalism with the phenomenologist, as the widespread/popular supposition has it, simply devoting him or herself to the study of the intentional positioning of consciousness, which is taken to be an internal, subjective, qualitative, and intrinsic property of mental states. It is not only the sciences of the mind, then, that Thompson is challenging in this book.

Evan Thompson is best known to date for his pioneering work with Francisco Varela and the development of autopoiesis as a distinct and unique approach to the study of self-organizing systems, including the organism. It has its roots in Kant's treatment of the organism in his *Critique of Teleological Judgment* (1790), and Thompson provides a wonderfully rich and precise account of Kant's contribution in this book. On these issues of self-organization and the nature of the organism, Kant is shown to be far from the dead dog he is often assumed to be. Thompson simply refuses to rest content with the widespread view that there is no distinct `hard problem` of life—the problem Kant was wrestling with and could not resolve—simply because, the claim goes, there is no deep continuity of life and consciousness but only a radical break between them (one proponent of this view is David Chalmers). The widely held view is that whilst we can account for living processes by providing physical accounts of structure and function, when it comes to consciousness, it is necessary to resist functional analysis. The problem with this is that it treats consciousness and the `feeling of life` in mysterious terms, throwing up poorly conceived thought experiments such as the brain in a vat and the zombie problems. The physicalist account of life goes wrong in supposing that a living system can be explained in terms of `sheer exteriority` (*partes extra partes*), and is a system devoid of `immanent purposiveness` (p. 225). But can we solve the problem of the relation of mind and body so long as we continue to conceptualize it in such a way that they intrinsically exclude one another? As Thompson points out, `this chasm is a philosophical construction built on sedimented and problematic ways of thinking going back to Descartes` (ibid.).

Thompson's magisterial study makes an important contribution on a number of fronts. First, it wants to explain selfhood or subjectivity from the ground up by accounting for the autonomy it is legitimate to identify with living and cognitive creatures. Second, it wishes to contribute to the work of those who are seeking to
‘naturalize’ phenomenology. Thompson holds that phenomenology cannot rest content with providing descriptions of lived experience but must understand and interpret its inquiries in relation to those of the life sciences such as biology and the sciences of the mind. Clearly, there are all sorts of dangers in this effort to naturalize phenomenology, and, more generally, in the ambitious synthesis Thompson is after. On the one hand, science can end up being treated ineptly; on the other hand, phenomenology can lose its integrity as a distinct and novel intellectual practice. It is to Thompson’s credit that he avoids both of these pitfalls. His challenge is to show that not only must phenomenology engage with science, but also that naturalism needs to climb up to the vantage point of phenomenology. It must do this if it is to be a serious ‘science’ of life. We can longer be satisfied with a purely physicalist approach to embodied consciousness. Husserl attempted to show that the synthesis of consciousness is something quite different from the external combinations of natural or physical elements that suppose ‘mutual externality, spatial intermingling and interpenetration’; by contrast conscious life involves ‘intentional intertwining, mutual implication of meaning’ (Husserl cited in Thompson, p. 356). Husserl expresses this decisive insight in a series of lectures on phenomenological psychology given in 1925, but it is one Bergson made central to his analysis of the difference between the physical and the mental in his 1889 study of ‘the immediate data of consciousness’ (translated into English as Time and Free Will). Bergson’s analysis centres on making clear the difference between two kinds of multiplicity: spatial and discrete, on the one hand, and temporal and continuous, on the other hand.

Thompson acknowledges that his argument that phenomenology can stand in an explanatory relation to biology will sound odd to many of his readers: ‘What could phenomenology possibly explain in this domain?’ (p. 358). His key argument is that the physicalist conception of nature as an objective base for the phenomenal can no longer hold sway and instead nature needs to be re-examined from the perspective of phenomenology (p. 359). The most progressive move forward to make, then, is not, as some commentators have supposed (Brian Leiter for example), to limit the imperial claims of substantive naturalism (everything real is physical) by curtailing it to a methodological naturalism that allows for an appreciation of qualia. Rather, it consists in contesting the primacy of the physical and of the physicalist conception of nature: the mental goes all the way down. This is, in fact, a philosophy of nature that early philosophers of life of the modern period such as Nietzsche and Bergson were seeking to promote, and that did not have its properly effective moment in twentieth century thought and inquiry. This is not to discredit the immense contribution and richness of phenomenology, but simply to indicate that the project Thompson is committed to has earlier sources and resources. Phenomenology makes a unique contribution in insisting upon the irreducibility of consciousness, and Thompson provides a superb demonstration of just what this amounts to in chapter eight of his book (pp. 221–43). In short, it means consciousness, conceived as an epistemic base, cannot be rendered equivalent to perceptual appearances. It is not simply the case that empirical objects are given to consciousness but rather that consciousness, conceived now as the activity that discloses objects as complex structured manifolds, is a condition of possibility for there being any appearances at all. So consciousness needs to be understood not simply empirically but...
transcendentally. Husserlian phenomenology continues the work effected by Kant’s transcendental turn, but the kind of project Thompson undertakes ensures it does not remain caught in the trap of transcendental idealism.

The book is divided into three principal parts. In the first part Thompson outlines the contribution the ‘enactive’ approach can make to the task of showing the continuity between life and mind. In the opening chapters, he provides an instructive introduction to the key concepts of phenomenology—for example, intentionality, active and passive geneses and syntheses, the move Husserl makes in his later work in the direction of generative phenomenology (treating not only intersubjectivity or the self-other relation, but also the events of birth and death and the interconnectedness of generations), as well as treating core notions such as autonomy and emergence. In part two he switches the focus to ‘life’ and engages with autopoiesis, the philosophy of the organism, and evolutionary theory. Thompson is especially good in this part of the book in showing precisely why it is inadequate for scientists to deny that the question of how ‘life’ in its minimal sense is to be defined—and centred on the issue of explaining how protocellular life arises from nonlife—is a valid one. As he puts it, the ‘question how and when life originated is inseparable from the question of what a living system is’ (p. 95). Moreover, he is persuasive in arguing that a characterization of life that can account for genuine individuality has logical priority over one that does not. It simply means that the philosophy of the organism has to be taken very seriously, and on this point I found myself largely in total agreement with him. What will not do in seeking to distinguish life from nonlife is simply coming up with a shopping list of those things we deem to characterize living systems, such as the genetic material of DNA and RNA, metabolism and self-maintenance, evolution by natural selection, and so on. To say that life is cellular because without the cell there is no life is fundamentally tautological. The question to be posed is rather: what is it about a cell that makes it something living? In the third and final part, the author focuses his attention on consciousness in life with a rich set of treatments of sensorimotor subjectivity, mental imagery, time and temporality, emotion and valence, and empathy and enculturation. There are two appendices on, respectively, Husserl and cognitive science, and emergence and the problem of downward causation.

It is with this third main part that the book truly comes to life (excuse the pun). Thompson has been inspired by the work of Hans Jonas (1903–93), a phenomenologist who made a series of original, if neglected, contributions to our thinking of life in all its most salient aspects, including the ethical one. In this part of the book Thompson provides valuable insight into the patterns of advanced or complex forms and systems of life, including immanent purposiveness, sense-making, and identity over time. Moreover, he shows that these notions are essentially normative ones. They refer to what Merleau-Ponty called ‘vital structures’ and only such structures, as opposed to entirely physical ones, can be comprehended in relation to norms (we comprehend physical structures according to laws). On the one hand, these structures enable us to develop an understanding of vitally important biological phenomena such as stress, illness fatique, and health, as well as more generally plasticity and adaptation. On the other hand, such concepts enable us to develop an appreciation of how questions of illness and health become more complex for us as a living system grows in historical complexity (cultural and spiritual). This latter half of the
investigation is not really explored by Thompson, and I am not sure of the reasons for this (Nietzsche erected an entire philosophy on its basis). It could be because Thompson is wedded chiefly to phenomenology and, if this great tradition of thought has one weakness, it is that it assumes things such as autonomy and individuality, and does not pay enough attention to their historical and cultural bases which are best analysed in the genealogical and critical terms undertaken by Nietzsche. It is perhaps in this respect that phenomenology can often come across to some philosophers, such as myself, as a bourgeois science.

The most important argument cashed out in the book is that the self-organizing features of mind can be understood as an enriched version of the self-organizing features of life, in which the self-organization of biological life implies cognition and the incipient mind finds sentient expression in the self-organizing dynamics of action, perception, and emotion. If biology has allowed itself to become trapped in a genocentrism, which complexity theory has sought to expose and break out of, then the science of the mind has allowed itself to become unnecessarily and unwisely trapped in a reification of the brain as the progenitor of our representations of the world. For Thompson, mental life is bodily life and situated in the world, which means that the roots of mental life cannot simply reside in the brain but ramify through the body and its environment. It is simply an error—of atomism, of mechanism, of our spatial habits—to reduce mental life to brain processes going on in our heads. Thompson is wonderfully innovative and provocative when he suggests there is, in fact, not a mind-body problem, but only a body-body problem. The mind-body problem only arises at the point we commit ourselves to the basic Cartesian error of conceiving the mental as somehow mysteriously separate from bodily life (an error that Nietzsche sought to overcome in the emphasis he placed on the study of the body over the reified mind). Although Thompson relies on the obvious phenomenological references to demonstrate his thesis—notably the rich contributions made by figures such as Husserl and Merleau-Ponty—I trace this effort to overcome our reification of the brain and mind to philosophers of life such as Nietzsche and Bergson. These figures do not appear in Thompson’s rich text, and their absence is a sign that there is a neglected and forgotten tradition that can enable us to get out of the impasses that mar our making real progress in the philosophy and sciences of the mind.

Bergson’s great and remarkable text of 1896, *Matter and Memory*, is an especially fertile text in this regard. Neglect of it leads Thompson to at times exaggerating the newness of what is being proposed in this book, as when on p. 244, for example, he writes: ‘In recent years, a new dynamic sensorimotor approach to understanding perceptual consciousness has arisen in cognitive science and the philosophy of mind’. But such an approach was already being advocated by Bergson at the end of the nineteenth century! Bergson attempted to draw our attention to the faulty assumptions on which much of our thinking about mind and world is founded. For example, he sought to show how realism ends up in the trap of idealism. To state this in brief terms of two notation systems: for the idealist the world is the product of our ideas and cannot exist independently of them. For the realist or materialist the mental is reduced to the cerebral and in this way the brain is made into the progenitor of our representations of the world. Bergson takes both to task for reducing the relation of the body to the world into one of speculative knowledge as opposed to vital activity.
Realism becomes idealism when it locates perception and consciousness in a centre or some detached isolated object that has been abstractly divorced from its conditions of action in the world. Both err in making the presentation of the part—the mind or the brain—equivalent to the presentation of the whole (say the structural coupling or organism and the environment). A great deal of neuroscience, and what passes today for the philosophy of mind (identity theory, for example), inadvertently produces an idealism of the cerebral substance by severing motor activity from the processes of perception, localizing perception in the sensory nervous elements. But this is in error in thinking, since the perception is no more in the sensory centers than in the motor centers; rather, it measures the complexity of their relations, and, is, in fact, where it appears to be. The view that Bergson sought to combat most is one which would, in treating sensations merely as signals, in which the office of each sense is to translate homogeneous and mechanical movements into its language, posit, on the one hand, homogeneous movements in space and, on the other, extended sensations in consciousness (a quantitative outside and a qualitative inside). In contrast with this view, Bergson argued that the identity resides not between the cerebral and the mental, but rather between the real action of sensory elements and the virtual action of perception (including the motor diagrams). Thus, perception is a part of things (it is not an interior, subjective vision), just as an affective sensation (such as the capacity to experience pain or pleasure) does not spring from the depths of inner consciousness by extending itself into an outer realm (affection is not a simple movement from an inner intensive state to an outer extensity), simply because it is intimately bound up with the modifications that inform the movement of one body with other bodies. Our appreciation of the movement of bodies becomes more complex when this is thought in terms of duration and the addition of memory. Although this movement has its material conditions in a nervous system—‘The greater the power of action of a body, symbolized by a higher degree of complexity in the nervous system, the wider is the field that perception embraces’ (Bergson)—it cannot be reduced to its simple physical embodiment simply because the brain is part of the world and not simply in one’s head. The error in treating the brain in reified terms as the material center of consciousness is that it withdraws the objects which encase it, so also withdrawing in the process the very thing we designate as a cerebral state, simply because the brain is dependent on the objects in the world for its properties and states. Realism or materialism surreptitiously passes over into idealism where it posits as isolable by right what is isolated only in idea. Bergson is not, of course, denying that there exists a close connection between a state of consciousness and the brain. His argument is directed against any reified treatment of the brain in separation from the world it is a part of and from ‘life’ treated as a sphere of praxis or activity. He thus argues against the idea that if we could penetrate into the inside of the brain and see at work the dance of the atoms which make up the cortex we would then know every detail of what is taking place in consciousness. The body is a center of action and not a house of representation. Thompson is close to Bergson when he argues that the brain is an organ and not an organism. This means that each of us is precisely not a brain in a vat but a bodily subject (p. 242). There is nothing genuinely astonishing in the hypothesis that what one is, is nothing but a pack of neurons (you are your synapses), except perhaps for the simple-minded character in which some scientists tell us the so-called ‘truth’.
To be fair to his study, Thompson does make reference to some neglected sources and figures of modern thought, such as Maine be Biran (1766–1824), who attempted to take seriously ‘the feeling of existence’ in his work on habit and spontaneity and who located the source of the personal ‘I’ in the bodily experience of the exercising effort in movement (I would also mention the work on habit of his successor, Felix Ravaisson). In addition, I would acknowledge that phenomenologists such as Merleau-Ponty, a figure greatly inspired by Bergson of course, enrich what Bergson gives us in terms of a philosophy of the lived body and the syntheses of time consciousness. Bergson’s revolution consists in thinking in terms of duration and not space, but he often restricts the activity of the body to the present and grants the future to memory, so reinstating dualism if of an unorthodox, non-Cartesian, kind.

I share Thompson’s view that too much contemporary theorizing about life and mind remains in the grip of atomistic and mechanistic habits—habits which need their own genetic explanation. As he points out, genocentrism and computationalism—the two dominant models in our thinking on evolution and mind—run on the same conceptual fuel and both perpetuate, rather than break free from, the dualisms of hardware versus software, mater versus information, body versus mind, as well as get wrong the role that particular subsystems play in the dynamic and complex phenomena of the whole organism embedded in its environment. These errors are not merely intellectual errors but also fundamentally ‘ethical’ ones in the deepest and richest sense of this term. Thompson is right to take to task the metaphors these modes and models of thinking rely upon, including the metaphor of information, and to draw attention to the fact that the very disavowal of metaphor—for example, by Richard Dawkins when he claims that life is just bytes and bytes of information and that this is not metaphor but ‘the plain truth’—is intellectually dishonest and irresponsible. The core claim that DNA is an information store is a serious oversimplification that has little predictive or explanatory power, if any. Instead, it serves to obscure a genuine understanding of the complex dynamics of autopoiesis, reproduction, heredity, and development. Reigning in science is an inflated conception of natural selection that fails to appreciate the extent to which its emergence is the outcome of more basic dynamic and thermodynamic processes. Thompson takes up these arguments, familiar from the work of Depew and Weber, and endeavours to show that dynamic stabilization in the form of the emergence of stable self-producing processes in a bounded biochemical system is the prerequisite of natural selection.

Thompson is right, I believe, when he states that we are in the grip of informational idolatry and superstition, not science. In the 1880s Nietzsche drew on new work in embryology in an effort to counter what he saw as the ‘mechanistic senselessness’ of Darwinism—the choice of phrasing here is revealing—and to appreciate complexity and synthesis at the most primitive level of life (what he called ‘the preform of life’ and characterized perhaps awkwardly as ‘will to power’). Thompson’s study shows that much twentieth century philosophy and science ignored this appeal to complexity—Nietzsche summarised it in his critique of Herbert Spencer with the phrase the ‘music of life’, by which meant that life is sense (Sinn) and sense is ‘complex’—and instead stubbornly wedded itself to atomistic and mechanistic habits with their attendant reductionisms and spatializations. So long we remain wedded to these habits we are unable to adequately think ‘life’. As I
have said already, this is not simply an intellectual problem but an ethical one. As
Nietzsche pointed out, we knowers remain unknown to ourselves.

Perhaps the most important contribution *Mind in Life* seeks to make is to our
understanding and appreciation of sentience: what is the feeling of life and how do
we best explain this feeling? As Thompson duly notes, accounting for the emergence
and presence of sentience in the natural world is perhaps the truly outstanding
problem of the philosophy and science of the mind today. He calls it at one point in
the book, ‘the sensorimotor way of being in the world’ (p. 221). In its full nature or
extent it comprises locomotion and perception, emotion and feeling, as well as the
sense of agency and self along with the aspiration or drive towards autonomy (which
is in fact what Nietzsche was seeking to capture in his formula of the will to power).
I am convinced that Thompson is right about this and has made one of the richest
contributions to the study of ‘mind in life’ in recent years. It deserves to become a
major work of reference and inspiration for research in the immediate future and,
indeed, for many years to come. It provides a genuine and far-reaching clarification
of core issues in the philosophy and science of the mind, and is to be greatly
welcomed. My hope is that Thompson will now turn more of his attention to the
critical and clinical study of the health and pathology of consciousness, in short, to
the normative dimension of consciousness studies.
AUTHOR QUERY

AUTHOR PLEASE ANSWER QUERY.

No Query.