

Vitalism And The Scientific Image In Post Enlightenment Life Science 1800 2010 History Philosophy And Theory Of The Life Sciences

Andrea Mubi Brighenti and Mattias Kärrholm focus on territory as a living phenomenon--and territoriality as an active and constantly reshaping force.

This volume explores the intersection between early modern philosophy and the life sciences by presenting the contributions of important but often neglected figures such as Cudworth, Grew, Glisson, Hieronymus Fabricius, Stahl, Gallego, Hartsoeker, and More, as well as familiar figures such as Descartes, Spinoza, Leibniz, Malebranche, and Kant.

Stephen Gaukroger presents an original account of the development of empirical science and the understanding of human behaviour from the mid-eighteenth century. Since the seventeenth century, science in the west has undergone a unique form of cumulative development in which it has been consolidated through integration into and shaping of a culture. But in the eighteenth century, science was cut loose from the legitimating culture in which it had had a public rationale as a fruitful and worthwhile form of enquiry. What kept it afloat between the middle of the eighteenth and the middle of the nineteenth centuries, when its legitimacy began to hinge on an intimate link with technology? The answer lies in large part in an abrupt but fundamental shift in how the tasks of scientific enquiry were conceived, from the natural realm to the human realm. At the core of this development lies the naturalization of the human, that is, attempts to understand human behaviour and motivations no longer in theological and metaphysical terms, but in empirical terms. One of the most striking feature of this development is the variety of forms it took, and the book explores anthropological medicine, philosophical anthropology, the 'natural history of man', and social arithmetic. Each of these disciplines re-formulated basic questions so that empirical investigation could be drawn upon in answering them, but the empirical dimension was conceived very differently in each case, with the result that the naturalization of the human took the form of competing, and in some respects mutually exclusive, projects.

Diese Studie bietet eine systematische Zusammenfassung der empirischen Forschungen in der Science Education, der internationalen Didaktik der Naturwissenschaften. Dieses Forschungsfeld hat seit einiger Zeit einen großen Einfluss auf die deutschen Fachdidaktiken und auf das Verständnis von Didaktik generell. Das gesamte Feld der Science Education wird methodisch durchsucht, geordnet und analysiert. Für Didaktiker an Universitäten, Lehrer an Schulen und Schüler, die ihr eigenes Lernen strukturieren möchten, entsteht so ein umfassender Überblick. Diese Orientierung im Feld ermöglicht es auch, die deutschen Didaktiken kritisch einzuschätzen und in ihren Entwicklungen zu diskutieren. Im Einzelnen werden untersucht: die großen übergreifenden Kulturen und pädagogischen Trends (Inklusion, Assessments, Professionstwicklung), die verschiedenen Arten, Didaktik als Wissenschaft zu betreiben (Begründen, Beschreiben, Erklären, Beweisen), die Forschungsprogramme der Science Education (Conceptual Change, Model-Based Reasoning, Scientific Literacy, Attitudes and Interests, Learning

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Progressions, Science-Technology-Society, Socio-Scientific Issues, History and Philosophy of Science, Nature of Science). The Eighteenth century is one of the most important periods in the history of Western philosophy, witnessing philosophical, scientific, and social and political change on a vast scale. In spite of this, there are few single volume overviews of the philosophy of the period as a whole. The Routledge Companion to Eighteenth Century Philosophy is an authoritative survey and assessment of this momentous period, covering major thinkers, topics and movements in Eighteenth century philosophy. Beginning with a substantial introduction by Aaron Garrett, the thirty-five specially commissioned chapters by an outstanding team of international contributors are organised into seven clear parts: Context and Movements Metaphysics and Understanding Mind, Soul, and Perception Morals and Aesthetics Politics and Society Philosophy in relation to the Arts and Sciences Major Figures. Major topics and themes are explored and discussed, ranging from materialism, free will and personal identity; to the emotions, the social contract, aesthetics, and the sciences, including mathematics and biology. The final section examines in more detail three figures central to the period: Hume, Rousseau and Kant. As such The Routledge Companion to Eighteenth Century Philosophy is essential reading for all students of the period, both in philosophy and related disciplines such as politics, literature, history and religious studies.

Philosophy has long puzzled over the relation between mind and brain. This volume presents some of the state-of-the-art reflections on philosophical efforts to 'make sense' of neuroscience, as regards issue including neuroaesthetics, brain science and the law, neurofeminism, embodiment, race, memory and pain.

Approaches from the sciences, philosophy and theology, including the emerging field of astrobiology, can provide fresh perspectives to the age-old question 'What is Life?'. Has the secret of life been unveiled and is it nothing more than physical chemistry? Modern philosophers will ask if we can even define life at all, as we still don't know much about its origins here on Earth. Others regard life as something that cannot simply be reduced to just physics and chemistry, while biologists emphasize the historical component intrinsic to life on Earth. How can theology constructively interpret scientific findings? Can it contribute constructively to scientific discussions? Written for a broad interdisciplinary audience, this probing volume discusses life, intelligence and more against the background of contemporary biology and the wider contexts of astrobiology and cosmology. It also considers the challenging implications for science and theology if extraterrestrial life is discovered in the future.

Life Forms in the Thinking of the Long Eighteenth Century is a unique reappraisal of Enlightenment thought on nature, biology, and the organic world.

With this volume of the series Logic, Epistemology, and the Unity of Science edited by S. Rahman et al. a challenging dialogue is being continued. The series' first volume argued that one way to recover the connections between logic, philosophy of sciences, and sciences is to acknowledge the host of alternative logics which are currently being developed. The present volume focuses on four key themes. First of all, several chapters unpack the connection between knowledge and epistemology with particular focus on the notion of knowledge as resulting from interaction. Secondly, new epistemological perspectives on linguistics, the

foundations of mathematics and logic, physics, biology and law are a subject of analysis. Thirdly, several chapters are dedicated to a discussion of Constructive Type Theory and more generally of the proof-theoretical notion of meaning. Finally, the book brings together studies on the epistemic role of abduction and argumentation theory, both linked to non-monotonic approaches to the dynamics of knowledge.

This book introduces the idea of sustainability and its aesthetic dimension, suggesting that the role of the aesthetic is an active one in developing an ecologically, economically and culturally healthy society. With an introduction by Christopher Crouch and an afterword by John Thackara, the book gathers together a range of essays that address the issue of the aesthetics of sustainability from a multitude of disciplinary and cultural perspectives.

New materialism challenges the mechanistic models characteristic of early modern philosophy that regarded matter as largely passive and inert. Instead it gives weight to topics often overlooked in such accounts: agency, vitalism, complexity, contingency, and self-organization. This collection, which includes an international roster of contributors from philosophy, history, literature, and science, is the first to ask what is "new" about the new materialism and place it in interdisciplinary perspective. Against current theories of new materialism it argues for a deeper engagement with materialism's history, questions whether matter can be "lively," and asks whether new materialism's wish to revitalize politics and the political lives up to its promise. Contributors: Keith Ansell-Pearson, Sarah Ellenzweig, Christian J. Emden, N. Katherine Hayles, Jess Keiser, Mogens Laerke, Ian Lowrie, Lenny Moss, Angela Willey, Catherine Wilson, Charles T. Wolfe, Derek Woods, and John H. Zammito.

Vitalism is understood as impacting the history of the life sciences, medicine and philosophy, representing an epistemological challenge to the dominance of mechanism over the last 200 years, and partly revived with organicism in early theoretical biology. The contributions in this volume portray the history of vitalism from the end of the Enlightenment to the modern day, suggesting some reassessment of what it means both historically and conceptually. As such it includes a wide range of material, employing both historical and philosophical methodologies, and it is divided fairly evenly between 19th and 20th century historical treatments and more contemporary analysis. This volume presents a significant contribution to the current literature in the history and philosophy of science and the history of medicine.

This book provides an overview of key features of (philosophical) materialism, in historical perspective. It is, thus, a study in the history and philosophy of materialism, with a particular focus on the early modern and Enlightenment periods, leading into the 19th and 20th centuries. For it was in the 18th century that the word was first used by a philosopher (La Mettrie) to refer to himself. Prior to that, 'materialism' was a pejorative term, used for wicked thinkers, as a near-synonym to 'atheist', 'Spinozist' or the delightful 'Hobbist'. The book provides the different forms of materialism,

Hellrich investigated this problem both empirically and theoretically and found some variants of SVD-based algorithms to be unaffected. Furthermore, he created the JeSemE website to make word embedding based diachronic research more accessible. It provides information on changes in word denotation and emotional connotation in five diachronic corpora. Finally, the author conducted two case studies on the applicability of these methods by investigating the historical understanding of electricity as well as words connected to Romanticism. They showed the high potential of distributional semantics for further applications in the digital humanities.

This is the first volume of original commissioned papers on the subject of Newton and empiricism. The chapters, contributed by a leading team of both established and younger international scholars, explore the nature and extent of Newton's relationship to a variety of empiricisms and empiricists. Among the many significant contributions of the volume are a detailed engagement with Newton's optical writings, a careful contextualization of Newton's methods in seventeenth century context, a critical analysis of the ways in which Locke and Hume responded to Newton, and a history of the reception of Newton's methods in astronomy.

This is an open access title available under the terms of a CC BY-NC-ND 4.0 International licence. It is free to read at Oxford Scholarship Online and offered as a free PDF download from OUP and selected open access locations. There are two very general ways in which we can think about the world. The more traditional one is that it is fundamentally composed of enduring things, and that any changes we observe are really secondary. The more radical alternative is that the world essentially consists of processes, and that the things we discern are only static snapshots of an ever-changing reality. This book defends this latter view in the specific context of the living world. It argues that biology is the study of the processes that constitute living beings, and that all the things biologists study ultimately derive their existence from more basic processes. The eighteen essays in this volume consider the philosophical and scientific consequences of thinking about life in processual terms.

This volume reconstructs the body of sensibility and the discourse which constructed it. The discourse of sensibility was deployed very widely throughout the mid- to late-eighteenth century, particularly in France and Britain. To inquire into the body of sensibility is then necessarily to enter into an interdisciplinary space and so to invite the plurality of methodological approaches which this collection exemplifies. The chapters collected here draw together the histories of literature and aesthetics, metaphysics and epistemology, moral theory, medicine, and cultural history. Together, they contribute to four major themes: First, the collection reconstructs various modes by which the sympathetic subject was construed or scripted, including through the theatre, poetry, literature, and medical and philosophical treatises. It secondly draws out those techniques of affective pedagogy which were implied by the medicalisation of the knowing body, and

thirdly highlights the manner in which the body of sensibility was constructed as simultaneously particular and universal. Finally, it illustrates the 'centrifugal forces' at play within the discourse, and the anxiety which often accompanied them. At the centre of eighteenth-century thought was a very particular object: the body of sensibility, the Enlightenment's knowing body. The persona of the knowledge-seeker was constructed by drawing together mind and matter, thought and feeling. And so where the Enlightenment thinker is generally associated with reason, truth-telling, and social and political reform, the Enlightenment is also known for its valorisation of emotion. During the period, intellectual pursuits were envisioned as having a distinctly embodied and emotional aspect. The body of 'sensibility' encompassed these apparently disparate strands and was associated with terms including 'sentimental', 'sentiment', 'sense', 'sensation', and 'sympathy'.

Wilhelm Reich's experiments in the 1930s with cutting-edge light microscopy and time-lapse micro-cinematography were considered discredited, but not because of shoddy lab technique, as has been claimed. Scientific opposition to Reich's experiments, James Strick argues, grew out of resistance to his unorthodox sexual theories and Marxist leanings. A unique contribution to the understanding of social science, showing the implications of quantum physics for the nature of human society.

"This book presents a complete, global history of the biological sciences from ancient times to today-introducing a long-term perspective to the history of biological thought, while showing its fractures and upheavals through the ages. The history of biology often neglects certain areas, such as ecology, ethology (the study of non-human animal behavior), and plant biology-areas which are covered in this work. The broad, global perspective offered here will allow the reader to better appreciate the nature of the interdisciplinary exchanges that have shaped the biological sciences, perhaps more than any other discipline. Much attention is also given to the contribution of technology, the role of experimentation, and, more generally, the social and technological environment within which scientific transformations develop"--

This book offers a comprehensive and unitary study of the philosophy of Francis Bacon, with special emphasis on the medical, ethical and political aspects of his thought. It presents an original interpretation focused on the material conditions of nature and human life. In particular, coverage in the book is organized around the unifying theme of Bacon's notion of appetite, which is considered in its natural, ethical, medical and political meanings. The book redefines the notions of experience and experiment in Bacon's philosophy of nature, shows the important presence of Stoic themes in his work as well as provides an original discussion of the relationships between natural magic, prudence and political realism in his philosophy. Bringing together scholarly expertise from the history of philosophy, the history of science and the history of literature, this book presents readers with a rich and diverse contextualization of Bacon's

philosophy.

This book offers a comprehensive account of vitalism and the Romantic philosophy of nature. The author explores the rise of biology as a unified science in Germany by reconstructing the history of the notion of “vital force,” starting from the mid-eighteenth through the early nineteenth century. Further, he argues that Romantic Naturphilosophie played a crucial role in the rise of biology in Germany, especially thanks to its treatment of teleology. In fact, both post-Kantian philosophers and naturalists were guided by teleological principles in defining the object of biological research. The book begins by considering the problem of generation, focusing on the debate over the notion of “formative force.” Readers are invited to engage with the epistemological status of this formative force, i.e. the question of the principle behind organization. The second chapter provides a reconstruction of the physiology of vital forces as it was elaborated in the mid- to late-eighteenth century by the group of physicians and naturalists known as the “Göttingen School.” Readers are shown how these authors developed an understanding of the animal kingdom as a graded series of organisms with increasing functional complexity. Chapter three tracks the development of such framework in Romantic Naturphilosophie. The author introduces the reader to the problem of classification, showing how Romantic philosophers of nature regarded classification as articulated by a unified plan that connects all living forms with one another, relying on the idea of living nature as a universal organism. In the closing chapter, this analysis shows how the three instances of pre-biological discourse on living beings – theory of generation, physiology and natural history – converged to form the consolidated disciplinary matrix of a general biology. The book offers an insightful read for all scholars interested in classical German philosophy, especially those researching the philosophy of nature, as well as the history and philosophy of biology.

Alice A. Kuzniar critically examines the alternative medical practice of homeopathy within the Romantic culture in which it arose. In *The Birth of Homeopathy out of the Spirit of Romanticism*, Kuzniar argues that Hahnemann was a product of his time rather than an iconoclast and visionary.

This translated volume by Andrea Borghini and Elena Casetta (original title: *Filosofia della biologia*) introduces a wide spectrum of key philosophical problems related to life sciences in a clear framework and an accessible style, with a special emphasis on metaphysical questions.

This book offers an important account of the relationship between science and culture in the eighteenth century. It examines the 'vitalist' turn in physiology and natural philosophy, and its presence and effect in the burgeoning of philosophical and scientific inquiry of the Scottish Enlightenment, and the radical politics and culture of the 1790s. In the middle of the twentieth century the French poets Raymond Queneau and Francis Ponge devoted themselves to the apparently quixotic task of reviving the dormant tradition of the cosmogonic poem. Queneau's *Petite cosmogonic*

portative updates the verse cosmogony as it was written by Sève and Du Bartas, drawing on the freshest scientific discoveries of its day and employing a ludic rhetoric indebted to Freud, Joyce and the Surrealists. *La Seine* and the "Texte sur l'électricité" are major components of Ponge's fragmentary cosmology. While looking back to Lucretius, they cite modern scientific texts extensively, in accordance with a strategy derived from Lautréamont. *Poetry and Cosmogony* offers the most thorough readings to date of these texts, analysing the ways in which they recast scientific material, and estimating the durability of the resulting poetry.

Scientists studying the burning of stars, the evolution of species, DNA, the brain, the economy, and social change, all frequently describe their work as searching for mechanisms. Despite this fact, for much of the twentieth century philosophical discussions of the nature of mechanisms remained outside philosophy of science. The *Routledge Handbook of Mechanisms and Mechanical Philosophy* is an outstanding reference source to the key topics, problems, and debates in this exciting subject and is the first collection of its kind. Comprising over thirty chapters by a team of international contributors, the Handbook is divided into four Parts: Historical perspectives on mechanisms The nature of mechanisms Mechanisms and the philosophy of science Disciplinary perspectives on mechanisms. Within these Parts central topics and problems are examined, including the rise of mechanical philosophy in the seventeenth century; what mechanisms are made of and how they are organized; mechanisms and laws and regularities; how mechanisms are discovered and explained; dynamical systems theory; and disciplinary perspectives from physics, chemistry, biology, biomedicine, ecology, neuroscience, and the social sciences. Essential reading for students and researchers in philosophy of science, the Handbook will also be of interest to those in related fields, such as metaphysics, philosophy of psychology, and history of science.

This volume comprises studies of the early modern drama of motion and transformation of knowledge. It is unique in taking its global nature as fundamental and contains studies of the theme of motion and knowledge in China, Europe and the Pacific from the 16th to the 18th century. People living around the turn of the 17th century were experiencing motion in ways beyond the grasp of anyone less than a century earlier. Goods and people were crossing lands and oceans to distances never envisioned and in scales hardly imaginable by their recent predecessors. The earth itself has been set in motion and the heavens were populated by a whole new array of moving objects: comets, moons, sun spots. Even the motion of terrestrial objects—so close at hand and seemingly obvious—was being thoroughly reshaped. In the two centuries to follow, this incessant, world-changing motion would transform the creation, interpretation and dissemination of knowledge and the life and experiences of the people producing it: savants, artisans, pilots, collectors.

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Embodiment--defined as having, being in, or being associated with a body--is a feature of the existence of many entities, perhaps even of all entities. Why entities should find themselves in this condition is the central concern of the present volume. The problem includes, but also goes beyond, the philosophical problem of body: that is, what the essence of a body is, and how, if at all, it differs from matter. On some understandings there may exist bodies, such as stones or asteroids, that are not the bodies of any particular subjects. To speak of embodiment by contrast is always to speak of a subject that variously inhabits, or captains, or is coextensive with, or even is imprisoned within, a body. The subject may in the end be identical to, or an emergent product of, the body. That is, a materialist account of embodied subjects may be the correct one. But insofar as there is a philosophical problem of embodiment, the identity of the embodied subject with the body stands in need of an argument and cannot simply be assumed. The reasons, nature, and consequences of the embodiment of subjects as conceived in the long history of philosophy in Europe as well as in the broader Mediterranean region and in South and East Asia, with forays into religion, art, medicine, and other domains of culture, form the focus of these essays. More precisely, the contributors to this volume shine light on a number of questions that have driven reflection on embodiment throughout the history of philosophy. What is the historical and conceptual relationship between the idea of embodiment and the idea of subjecthood? Am I who I am principally in virtue of the fact that I have the body I have? Relatedly, what is the relationship of embodiment to being and to individuality? Is embodiment a necessary condition of being? Of being an individual? What are the theological dimensions of embodiment? To what extent has the concept of embodiment been deployed in the history of philosophy to contrast the created world with the state of existence enjoyed by God? What are the normative dimensions of theories of embodiment? To what extent is the problem of embodiment a distinctly western preoccupation? Is it the result of a particular local and contingent history, or does it impose itself as a universal problem, wherever and whenever human beings begin to reflect on the conditions of their existence? Ultimately, to what extent can natural science help us to resolve philosophical questions about embodiment, many of which are vastly older than the particular scientific research programs we now believe to hold the greatest promise for revealing to us the bodily basis, or the ultimate physical causes, of who we really are?

This book explores the breadth of philosophical interest in life and death during the early modern period. It connects debates in philosophy with the life sciences, linking the study of organisms to the practical aspect of philosophy, and reminding us that that philosophers were concerned with learning how to live and how to die.

This book examines the nexus between the corporeal, emotional, spiritual and intellectual aspects of human life as represented in the writing of the Middle Ages and the Renaissance. Authors from different fields examine not only the question of the body and

soul (or body and mind) but also how this question fits into a broader framework in the medieval and early modern period. Concepts such as gender and society, morality, sexuality, theological precepts and medical knowledge are a part of this broader framework. This discussion of ideas draws from over two thousand years of Western thought: from Plato in the fifth century BC and the fourth century Byzantine dialogues on the soul, to the philosophical and medical writings of the early 1700s. There are four sections to this book: each section is based on where the authors have found a conjunction between the body and mind/soul. The work begins with a section on text and self-perception, which focuses on creative output from the period. The second conjunction is human emotions which are described in their social contexts. The third is sex, where the human body and mind are traditionally believed to meet. The fourth section, Material Souls, engages with bodies and other material aspects of existence perceived, studied or utilised as material signs of emotional and spiritual activity.

Broad perspective on collectivity in the life sciences, from microorganisms to human consensus, and the theoretical and empirical opportunities and challenges. Many researchers and scholars in the life sciences have become increasingly critical of the traditional methodological focus on the individual. This volume counters such methodological individualism by exploring recent and influential work in the life sciences that utilizes notions of collectivity, sociality, rich interactions, and emergent phenomena as essential explanatory tools to handle numerous persistent scientific questions in the life sciences. The contributors consider case studies of collectivity that range from microorganisms to human consensus, discussing theoretical and empirical challenges and the innovative methods and solutions scientists have devised. The contributors offer historical, philosophical, and biological perspectives on collectivity, and describe collective phenomena seen in insects, the immune system, communication, and human collectivity, with examples ranging from cooperative transport in the longhorn crazy ant to the evolution of autobiographical memory. They examine ways of explaining collectivity, including case studies and modeling approaches, and explore collectivity's explanatory power. They present a comprehensive look at a specific case of collectivity: the Holobiont notion (the idea of a multi-species collective, a host and diverse microorganisms) and the hologenome theory (which posits that the holobiont and its hologenome are a unit of adaptation). The volume concludes with reflections on the work of the late physicist Eshel Ben-Jacob, pioneer in the study of collective phenomena in living systems. Contributors Oren Bader, John Beatty, Dinah R. Davison, Daniel Dor, Ofer Feinerman, Raghavendra Gadagkar, Scott F. Gilbert, Smit B. Ghosh, Deborah M. Gordon, James Griesemer, Zachariah I. Grochau-Wright, Erik R. Hanschen, Eva Jablonka, Mohit Kumar Jolly, Anat Kolm, Ehud Lamm, Herbert Levine, Arnon Levy, Xue-Fei Li, Elisabeth A. Lloyd, Yael Lubin, Eva Maria Luef, Ehud Meron, Richard E. Michod, Samir Okasha, Simone Pika, Joan Roughgarden, Eugene Rosenberg, Ayelet Shavit, Yael Silver, Alfred I. Tauber, Ilana Zilber-Rosenberg

In the last few decades, literary critics have increasingly drawn insights from cognitive neuroscience to deepen and clarify our understanding of literary representations of mind. This cognitive turn has been equally generative and contentious. While cognitive literary studies has reinforced how central the concept of mind is to aesthetic practice from the classical period to the present, critics have questioned its literalism and selective borrowing of scientific authority. *Mindful Aesthetics* presents both these

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perspectives as part of a broader consideration of the ongoing and vital importance of shifting concepts of mind to both literary and critical practice. This collection contributes to the forging of a new interdisciplinarity,' to paraphrase Alan Richardson's recent preface to the *Neural Sublime*, that is more concerned with addressing how, rather than why, we should navigate the increasingly narrow gap between the humanities and the sciences.

Across early modern Europe, the growing scientific practice of dissection prompted new and insightful ideas about the human body. This collection of essays explores the impact of anatomical knowledge on wider issues of learning and culture.

Introduction: "sweet science" -- Blake's mundane egg: epigenesis and milieu -- Equivocal life: Goethe's journals on morphology -- Tender semiosis: reading Goethe with Lucretius and Paul de Man -- Growing old together: Lucretian materialism in Shelley's *The triumph of life* -- A natural history of violence: allegory and atomism in Shelley's *The mask of anarchy* -- Coda: old materialism, or romantic Marx

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