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KEY=MODERN - STEWART HUNTER

Constituting Objectivity

Transcendental Perspectives on Modern Physics

Springer Science & Business Media In recent years, many philosophers of modern physics came to the conclusion that the problem of how objectivity is constituted (rather than merely given) can no longer be avoided, and therefore that a transcendental approach in the spirit of Kant is now philosophically relevant. The usual excuse for skipping this task is that the historical form given by Kant to transcendental epistemology has been challenged by Relativity and Quantum Physics. However, the true challenge is not to force modern physics into a rigidly construed static version of Kant's philosophy, but to provide Kant's method with flexibility and generality. In this book, the top specialists of the field pin down the methodological core of transcendental epistemology that must be used in order to throw light on the foundations of modern physics. First, the basic tools Kant used for his transcendental reading of Newtonian Mechanics are examined, and then early transcendental approaches of Relativistic and Quantum Physics are revisited. Transcendental procedures are also applied to contemporary physics, and this renewed transcendental interpretation is finally

compared with structural realism and constructive empiricism. The book will be of interest to scientists, historians and philosophers who are involved in the foundational problems of modern physics.

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Elements of Neurogeometry

Functional Architectures of Vision

Springer This book describes several mathematical models of the primary visual cortex, referring them to a vast ensemble of experimental data and putting forward an original geometrical model for its functional architecture, that is, the highly specific organization of its neural connections. The book spells out the geometrical algorithms implemented by this functional architecture, or put another way, the "neurogeometry" immanent in visual perception. Focusing on the neural origins of our spatial representations, it demonstrates three things: firstly, the way the visual neurons filter the optical signal is closely related to a wavelet analysis; secondly,

the contact structure of the 1-jets of the curves in the plane (the retinal plane here) is implemented by the cortical functional architecture; and lastly, the visual algorithms for integrating contours from what may be rather incomplete sensory data can be modelled by the sub-Riemannian geometry associated with this contact structure. As such, it provides readers with the first systematic interpretation of a number of important neurophysiological observations in a well-defined mathematical framework. The book's neuromathematical exploration appeals to graduate students and researchers in integrative-functional-cognitive neuroscience with a good mathematical background, as well as those in applied mathematics with an interest in neurophysiology.

The New Century

Bergsonism, Phenomenology and Responses to Modern Science

Routledge This volume covers the period between the 1890s and 1930s, a period that witnessed revolutions in the arts and society which set the agenda for the rest of the century. In philosophy, the period saw the birth of analytic philosophy, the development of new programmes and new modes of inquiry, the emergence of phenomenology as a new rigorous science, the birth of Freudian psychoanalysis, and the maturing of the discipline of sociology. This period saw the most influential work of a remarkable series of thinkers who reviewed, evaluated and transformed 19th-century thought. A generation of thinkers - among them, Henri Bergson, Emile Durkheim, Sigmund Freud, Martin Heidegger, Edmund Husserl, Karl Jaspers, Max Scheler, and Ludwig Wittgenstein - completed the disenchantment of the world and sought a new re-enchantment.

The History of Continental Philosophy

University of Chicago Press From Kant to Kierkegaard, from Hegel to Heidegger, continental philosophers have indelibly shaped the trajectory of Western thought since the eighteenth century. Although much has been written about these monumental thinkers, students and scholars lack a definitive guide to the entire scope of the continental tradition. The most comprehensive reference work to date, this eight-volume History of Continental Philosophy will both encapsulate the subject and reorient our understanding of it. Beginning with an overview of Kant's philosophy and its initial reception, the History traces the evolution of continental philosophy

through major figures as well as movements such as existentialism, phenomenology, hermeneutics, and poststructuralism. The final volume outlines the current state of the field, bringing the work of both historical and modern thinkers to bear on such contemporary topics as feminism, globalization, and the environment. Throughout, the volumes examine important philosophical figures and developments in their historical, political, and cultural contexts. The first reference of its kind, *A History of Continental Philosophy* has been written and edited by internationally recognized experts with a commitment to explaining complex thinkers, texts, and movements in rigorous yet jargon-free essays suitable for both undergraduates and seasoned specialists. These volumes also elucidate ongoing debates about the nature of continental and analytic philosophy, surveying the distinctive, sometimes overlapping characteristics and approaches of each tradition. Featuring helpful overviews of major topics and plotting road maps to their underlying contexts, *A History of Continental Philosophy* is destined to be the resource of first and last resort for students and scholars alike.

Niels Bohr, 1913-2013

Poincaré Seminar 2013

Birkhäuser This fourteenth volume in the *Poincaré Seminar Series* is devoted to Niels Bohr, his foundational contributions to understanding atomic structure and quantum theory and their continuing importance today. This book contains the following chapters: - Tomas Bohr, *Keeping Things Open*; - Olivier Darrigol, *Bohr's Trilogy of 1913*; - John Heilbron, *The Mind that Created the Bohr Atom*; - Serge Haroche & Jean-Michel Raimond, *Bohr's Legacy in Cavity QED*; - Alain Aspect, *From Einstein, Bohr, Schrödinger to Bell and Feynman: a New Quantum Revolution?*; - Antoine Browaeys, *Interacting Cold Rydberg Atoms: A Toy Many-Body System*; - Michel Bitbol & Stefano Osnaghi, *Bohr's Complementarity and Kant's Epistemology*. Dating from their origin in lectures to a broad scientific audience these seven chapters are of high educational value. This volume is of general interest to physicists, mathematicians and historians.

Probing the Meaning of Quantum Mechanics

Physical, Philosophical and Logical Perspectives

World Scientific This book provides a new original perspective on one of the most fascinating and important open questions in science: What is quantum mechanics talking about? Quantum theory is perhaps our best confirmed physical theory. However, in spite of its great empirical effectiveness and the subsequent technological developments that it gave rise to in the 20th century, from the interpretation of the periodic table of elements to CD players, holograms and quantum state teleportation, it stands even today without a universally accepted interpretation. The novelty of the book comes from the multiple viewpoints and the original angles taken by a group of young researchers from Europe and South America who gathered for several years under the auspices of the Center Leo Apostel. Each member of the group presented ideas concerning the interpretation of quantum mechanics. We had discussions ranging from the philosophical underpinnings of local realism and holism, information and decision theoretic approaches to quantum theory all the way to the many worlds interpretation. Strikingly, in much the same way as different — and indeed incompatible observations are needed to fully describe the physical state of affairs in quantum mechanics — the various interpretations of the theory also seem to shed viable, but not necessarily compatible, perspectives on different aspects of the same grand framework. The discussions that followed were both technical and lively, but perhaps their most remarkable quality was the absence of rigid points of view that unfortunately seems to paralyze so much of the discussion in this area. This book is an expression which can be interesting not only to the specialists but also for the general public attempting to get a grasp on one of the still most fundamental questions of present physics.

Contents: Do Quantum Dice Remember? (T Durt) Quantum Ontology in the Light of Gauge Theories (G Catren) The Probabilistic Structure of Quantum Theory as Originating from Optimal Observation in the Face of the Observer's Lack of Knowledge of His Own State (S Aerts) Quantum Realism, Information, and Epistemological Modesty (A Grinbaum) The Problem of Representation and Experience in Quantum Mechanics (C de Ronde) Bohrian Complementarity in the Light of Kantian Teleology (H Pringe) How Understanding Matters — Or Not (S Le Bihan) On the Orthocomplementation of State-Property-Systems of Contextual Systems (B D'Hooghe) The Deleuzian Concept of Structure and Quantum Mechanics (W A Christiaens) Understanding Probabilities in the Everett Interpretation of Quantum Mechanics (A Barton) Metaphysical Underdetermination and Logical Determination: The Case of Quantum Mechanics (J R B Arenhart) Neither Name, Nor Number (F Holik) EPR Correlations, Bell Inequalities and Common Cause Systems (G Hofer-Szabó) A Logic-Algebraic Framework for Contextuality and Modality in Quantum Systems (H Freytes)

Readership: Student, professional, and the general public interested in the quantum theory. **Key Features:** The constitution of the group is of mainly PhD students in Europe working in the physics, philosophy and logic of quantum theory. The group, though young, is technically skilled both in the formalism as well as in the traditional and contemporary

philosophical discussions regarding the interpretation of quantum mechanics. It is such a constitution which can provide the conditions for a “fresh look” at the field of foundations of quantum mechanics. Quantum mechanics is simply fascinating and remains even today an open problem for those who wish to seek for answers. The book will be a single unity, as it will be directed by “seeking understanding of quantum mechanics”, but it will also be wide and diverse in scope of topics and personal in choice and motivation of the topics handled, which is what makes this enterprise unique. Keywords: Quantum Mechanics; Physics; Philosophy; Logic

Probing the Meaning of Quantum Mechanics Information, Contextuality, Relationalism and Entanglement Proceedings of the II International Workshop on Quantum Mechanics and Quantum Information. Physical, Philosophical and Logical Approaches

World Scientific Publishing This book provides an interdisciplinary perspective on one of the most fascinating and important open questions in science: What is quantum mechanics talking about? Quantum theory is perhaps our best confirmed physical theory. However, despite its great empirical effectiveness and the subsequent technological developments that it gave rise to in the 20th century, from the interpretation of the periodic table of elements to CD players, holograms and quantum state teleportation, it stands even today without a universally accepted interpretation. The novelty of the book comes from the multiple viewpoints and subjects investigated by a group of researchers from Europe and North and South America.

Grete Hermann - Between Physics and Philosophy

Springer Grete Hermann (1901-1984) was a pupil of mathematical physicist Emmy Noether, follower and co-worker of neo-Kantian philosopher Leonard Nelson, and an important intellectual figure in post-war German social democracy. She is best known for her work on the philosophy of modern physics in the 1930s, some of which emerged from intense discussions with Heisenberg and Weizsäcker in Leipzig. Hermann's aim was to counter the threat to the Kantian notion of causality coming from quantum mechanics. She also discussed in depth the question of 'hidden variables' (including the first critique of von Neumann's alleged impossibility proof) and provided an extensive analysis of Bohr's notion of complementarity. This volume includes translations of Hermann's two most important essays on this topic: one hitherto unpublished and one translated here into English for the first time. It also brings together recent scholarly contributions by historians and philosophers of science, physicists, and philosophers and educators following in Hermann's steps. Hermann's work places her in the first rank among philosophers who wrote about modern physics in the first half of the last century. Those interested in the many fields to which she contributed will find here a comprehensive discussion of her philosophy of physics that places it in the context of her wider work.

Space

A History

Oxford University Press, USA The Ultimate Space Place presents information about the history of space flight, with emphasis on aviation, rocketry, Mercury, Gemini, Apollo, Skylab, and the Space Shuttle.

Care, Climate, and Debt

Transdisciplinary Problems and Possibilities

Springer Nature This volume spans economics, history, sociology, law, graphic design, religion, environmental science, politics and more to offer a transdisciplinary examination of debt. From this perspective, many of our most pressing social and environmental

crises are explored to raise critical questions about debt's problems and possibilities. Who do we owe? Where are the offsetting credits? Why do such persistent deficits in care permeate so much of our lives? Can we imagine new approaches to balance sheets, measures of value, and justice to reconcile these deficits? Often regarded as a constraint on our ability to meet the challenges of our day, this volume reimagines debt as a social construct capable of empowering people to organize and produce sustainable prosperity for all. This text is ideal for provoking classroom discussions that not only point out the gravity of the crises we face in the twenty-first century, but also seeks to set readers' minds free to create innovative solutions.

Kant and the Metaphors of Reason

Georg Olms Verlag In den vergangenen Jahrzehnten hat die Metapher in der Philosophie zunehmend Beachtung gefunden und wurde zu einem zentralen Thema, mit dem Kant sich in seiner kritischen Philosophie in Begriffen von Analogie und Symbolisierung beschäftigt. Sein Beitrag zur Entwicklung unseres Verständnisses der Rolle, die Bilder, Metaphern und Symbole in theoretischer und praktischer Hinsicht leisten, ist bedeutend; zudem ist Kant selber auch als Schöpfer von Metaphern weithin bekannt. Symbole, Analogien und ästhetische Ideen sind unleugbar metaphorische Verfahren, die eine ebenso grundlegende wie systematische Funktion in Kants philosophischer Sprache einnehmen. – Dieser Sammelband ist das Ergebnis einer neueren Initiative seitens einer internationalen Gruppe von mit Kant befassten Philosophen und Kant-Spezialisten, um die Erforschung von Themen zu befördern, die noch nicht umfassend bearbeitet sind. Das trifft mit Sicherheit auf die „Metapher“-Thematik in Kants Philosophie zu, der der vorliegende Band gewidmet ist. In recent decades, metaphor has become a respectable and central theme in philosophy. In his critical philosophy, Kant treats this theme in terms of the notions of analogy and symbolization. In addition to contributing significantly to the development of our understanding of the role played by images, metaphors and symbols in both theoretical and practical issues, Kant is also widely recognized as a great creator of metaphors in his own right. Symbols, analogies and aesthetic ideas are undeniably metaphorical processes, which fulfill a function in Kant's philosophical language that is as fundamental as it is systematic. This collected volume is the result of a recent initiative on the part of an international group of Kantian philosophers and scholars to promote research on topics that have yet to be thoroughly explored in academic research. This is certainly true of the topic of metaphor in Kant's philosophy, to which the present volume is devoted.

The Present Situation in the Philosophy of Science

Springer Science & Business Media This volume is a serious attempt to open up the subject of European philosophy of science to real thought, and provide the structural basis for the interdisciplinary development of its specialist fields, but also to provoke reflection on the idea of 'European philosophy of science'. This efforts should foster a contemporaneous reflection on what might be meant by philosophy of science in Europe and European philosophy of science, and how in fact awareness of it could assist philosophers interpret and motivate their research through a stronger collective identity. The overarching aim is to set the background for a collaborative project organising, systematising, and ultimately forging an identity for, European philosophy of science by creating research structures and developing research networks across Europe to promote its development.

Poiesis and Enchantment in Topological Matter

MIT Press A groundbreaking conception of interactive media, inspired by continuity, field, and process, with fresh implications for art, computer science, and philosophy of technology. In this challenging but exhilarating work, Sha Xin Wei argues for an approach to materiality inspired by continuous mathematics and process philosophy. Investigating the implications of such an approach to media and matter in the concrete setting of installation- or event-based art and technology, Sha maps a genealogy of topological media—that is, of an articulation of continuous matter that relinquishes a priori objects, subjects, and egos and yet constitutes value and novelty. Doing so, he explores the ethico-aesthetic consequences of topologically creating performative events and computational media. Sha's interdisciplinary investigation is informed by thinkers ranging from Heraclitus to Alfred North Whitehead to Gilbert Simondon to Alain Badiou to Donna Haraway to Gilles Deleuze and Félix Guattari. Sha traces the critical turn from representation to performance, citing a series of installation-events envisioned and built over the past decade. His analysis offers a fresh way to conceive and articulate interactive materials of new media, one inspired by continuity, field, and philosophy of process. Sha explores the implications of this for philosophy and social studies of technology and science relevant to the creation of research and art. Weaving together philosophy, aesthetics, critical theory, mathematics, and media studies, he shows how thinking about the world in terms of continuity and process can be informed by computational technologies, and what such thinking implies for emerging art and technology.

The Structure of the World

Metaphysics and Representation

Oxford University Press Steven French articulates and defends the bold claim that there are no objects in the world. He draws on metaphysics and philosophy of science to argue for structural realism—the position that we live in a world of structures—and defends a form of eliminativism about objects that sets laws and symmetry principles at the heart of ontology.

The Adventure of Reason

Interplay Between Philosophy of Mathematics and Mathematical Logic, 1900-1940

OUP Oxford Paolo Mancosu presents a series of innovative studies in the history and the philosophy of logic and mathematics in the first half of the twentieth century. The Adventure of Reason is divided into five main sections: history of logic (from Russell to Tarski); foundational issues (Hilbert's program, constructivity, Wittgenstein, Gödel); mathematics and phenomenology (Weyl, Becker, Mahnke); nominalism (Quine, Tarski); semantics (Tarski, Carnap, Neurath). Mancosu exploits extensive untapped archival sources to make available a wealth of new material that deepens in significant ways our understanding of these fascinating areas of modern intellectual history. At the same time, the book is a contribution to recent philosophical debates, in particular on the prospects for a successful nominalist reconstruction of mathematics, the nature of finitist intuition, the viability of alternative definitions of logical consequence, and the extent to which phenomenology can hope to account for the exact sciences.

Weyl and the Problem of Space

From Science to Philosophy

Springer Nature This book investigates Hermann Weyl's work on the problem of space from the early 1920s onwards. It presents new material and opens the philosophical problem of space anew, crossing the disciplines of mathematics, history of science and philosophy. With a Kantian starting point Weyl asks: among all the infinitely many conceivable metrical spaces, which one applies to the physical world? In agreement with general relativity, Weyl acknowledges that the metric can quantitatively vary with the physical situation. Despite this freedom, Weyl "deduces", with group-theoretical technicalities, that there is only one "kind" of legitimate metric. This construction was then decisive for the development of gauge theories. Nevertheless, the question of the foundations of the metric of physical theories is only a piece of a wider epistemological problem. Contributing authors mark out the double trajectory that goes through Weyl's texts, from natural science to philosophy and conversely, always through the mediation of mathematics. Readers may trace the philosophical tradition to which Weyl refers and by which he is inspired (Kant, Husserl, Fichte, Leibniz, Becker etc.), and explore the mathematical tradition (Riemann, Helmholtz, Lie, Klein) that permitted Weyl to elaborate and solve his mathematical problem of space. Furthermore, this volume analyzes the role of the interlocutors with whom Weyl discussed the nature of physical space (Einstein, Cartan, De Sitter, Schrödinger, Eddington). This volume features the work of top specialists and will appeal to postgraduates and scholars in philosophy, the history of science, mathematics, or physics.

Newton's Metaphysics

Essays

Oxford University Press In this collection of new and previously published essays, noted philosopher Eric Schliesser offers new interpretations of the significance of Isaac Newton's metaphysics on his physics and the subsequent development of philosophy more broadly. In particular, he explores the rich resonances between Newton's and Spinoza's metaphysics. The volume includes a substantive introduction, new chapters on Newton's modal metaphysics and his theology, and two postscripts in which Schliesser responds to some of his most important critics, including Katherine Brading, Andrew Janiak, Hylarie Kochiras, Steffen Ducheyne, and

Adwait Parker. The collection provides new and varied analyses on familiar focuses of Newton's work, adding important perspectives to the recent revival of interest in Spinoza's metaphysics.

Quantum Reality and Theory of Śūnya

Springer The book deals with expounding the nature of Reality as it is understood in contemporary times in Quantum Physics. It also explains the classical Indian theory of Śūnya in its diverse facets. Thereafter it undertakes comparison between the two which is an area of great topical interest. It is a cross-disciplinary study by erudite Indian and western scholars between traditional Indian knowledge system and contemporary researches in Physical sciences. It points out how the theory of 'Śūnyatā has many seminal ideas and theories in common with contemporary Quantum Physics. The learned authors have tried to dissolve the "mysteries" of Quantum Physics and resolved its "weird paradoxes" with the help of theory of Śūnyatā. The issue of non-separability or entanglement has been approached with the help of the Buddhist theory of Pratīyasamutpāda. The paradoxical situation of "wave-particle duality" has been explained with the help of Upaniṣadic theory of complementarity of the two opposites. The measurement problem represented by "Schrodinger's cat" has been dealt with by resorting to two forms of the calculation of probabilities. Some writers have argued for Śūnyatā-like non-essentialist position to understand quantum reality. To make sense of quantum theory some papers provide a happy symbiosis of technical understanding and personal meditative experience by drawing multifarious parallels. This book will be of interest to philosophically inclined physicists and philosophers with interest in quantum mechanics.

Structural Realism

Structure, Object, and Causality

Springer Science & Business Media Structural realism has rapidly gained in popularity in recent years, but it has splintered into many distinct denominations, often underpinned by diverse motivations. There is, no monolithic position known as 'structural realism,' but there is a general convergence on the idea that a central role is to be played by relational aspects over object-based aspects of ontology. What becomes of causality in a world without fundamental objects? In this book, the foremost authorities on structural realism attempt to answer this and related questions: 'what is structure?' and 'what is an object?' Also featured are the most recent advances in structural realism, including the intersection of mathematical structuralism and structural realism, and the latest

treatments of laws and modality in the context of structural realism. The book will be of interest to philosophers of science, philosophers of physics, metaphysicians, and those interested in foundational aspects of science.

Ernst Cassirer and the Critical Science of Germany, 1899–1919

Anthem Press Recovering a lost world of the politics of science in Imperial Germany, Gregory B. Moynahan approaches the life and work of the philosopher and historian Ernst Cassirer (1874–1945) from a revisionist perspective, using this framework to redefine the origins of twentieth-century critical historicism and critical theory. The only text in English to focus on the first half of the polymath Cassirer's career and his role in the Marburg School, this volume illuminates one of the most important – and in English, least-studied – reform movements in Imperial Germany.

Science Teaching

The Contribution of History and Philosophy of Science, 20th Anniversary Revised and Expanded Edition

Routledge Science Teaching explains how history and philosophy of science contributes to the resolution of persistent theoretical, curricular, and pedagogical issues in science education. It shows why it is essential for science teachers to know and appreciate the history and philosophy of the subject they teach and how this knowledge can enrich science instruction and enthuse students in the subject. Through its historical perspective, the book reveals to students, teachers, and researchers the foundations of scientific knowledge and its connection to philosophy, metaphysics, mathematics, and broader social influences including the European Enlightenment, and develops detailed arguments about constructivism, worldviews and science, multicultural science education, inquiry teaching, values, and teacher education. Fully updated and expanded, the 20th Anniversary Edition of this classic text, featuring four new chapters—The Enlightenment Tradition; Joseph Priestley and Photosynthesis; Science, Worldviews and Education; and Nature of Science Research—and 1,300 references, provides a solid foundation for teaching and learning in the field.

Pragmatism in Transition

Contemporary Perspectives on C.I. Lewis

Springer This collection is an attempt by a diverse range of authors to reignite interest in C.I. Lewis's work within the pragmatist and analytic traditions. Although pragmatism has enjoyed a renewed popularity in the past thirty years, some influential pragmatists have been overlooked. C. I. Lewis is arguably the most important of overlooked pragmatists and was highly influential within his own time period. The volume assembles a wide range of perspectives on the strengths and weaknesses of Lewis's contributions to metaphysics, epistemology, semantics, philosophy of science, and ethics.

Conceptual Change and the Philosophy of Science

Alternative Interpretations of the A Priori

Routledge In this book, David Stump traces alternative conceptions of the a priori in the philosophy of science and defends a unique position in the current debates over conceptual change and the constitutive elements in science. Stump emphasizes the unique epistemological status of the constitutive elements of scientific theories, constitutive elements being the necessary preconditions that must be assumed in order to conduct a particular scientific inquiry. These constitutive elements, such as logic, mathematics, and even some fundamental laws of nature, were once taken to be a priori knowledge but can change, thus leading to a dynamic or relative a priori. Stump critically examines developments in thinking about constitutive elements in science as a priori knowledge, from Kant's fixed and absolute a priori to Quine's holistic empiricism. By examining the relationship between conceptual change and the epistemological status of constitutive elements in science, Stump puts forward an argument that scientific revolutions can be explained and relativism can be avoided without resorting to universals or absolutes.

Neo-Kantianism in Contemporary Philosophy

Indiana University Press This comprehensive treatment of Neo-Kantianism discusses the main topics and key figures of the movement and their intersection with other 20th-century philosophers. With the advent of phenomenology, existentialism, and the Frankfurt School, Neo-Kantianism was deemed too narrowly academic and science-oriented to compete with new directions in philosophy. These essays bring Neo-Kantianism back into contemporary philosophical discourse. They expand current views of the Neo-Kantians and reassess the movement and the philosophical traditions emerging from it. This groundbreaking volume provides new and important insights into the history of philosophy, the scope of transcendental thought, and Neo-Kantian influence on the sciences and intellectual culture.

Rethinking Autonomy

A Critique of Principlism in Biomedical Ethics

SUNY Press Provides a critique of and alternative to the dominant paradigm used in biomedical ethics by exploring the Japanese concept of autonomy.

Albert Einstein, Boris Podolsky, Nathan Rosen

Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?

Springer Nature The work published by Einstein, Podolsky and Rosen (EPR) in 1935 is a classic in modern physics. It discusses, for the first time, the central feature of the quantum theory: entanglement. In general, systems are intertwined with each other in nature; that is, they have only one common, non-divisible state. This fact is responsible for all the oddities commonly associated with quantum theory, including the famous thought experiments with Schrödinger's cat and Wigner's friend. The entanglement of quantum

mechanics plays a central role in experiments with atoms and photons (Nobel Prize 2012 for Haroche and Wineland) and the planned construction of quantum computers. This book presents EPR's original work amplified with a detailed commentary, which examines both the historical context and all aspects of entanglement. In particular, it focuses on the interpretation of quantum theory and its consequences for a basic understanding of nature.

Mathematizing Space

The Objects of Geometry from Antiquity to the Early Modern Age

Birkhäuser This book collects the papers of the conference held in Berlin, Germany, 27-29 August 2012, on 'Space, Geometry and the Imagination from Antiquity to the Modern Age'. The conference was a joint effort by the Max Planck Institute for the History of Science (Berlin) and the Centro di Ricerca Matematica Ennio De Giorgi (Pisa).

Analogia

Science and Orthodox Theology

ST MAXIM THE GREEK INSTITUTE "...post-modern thought allowed the emergence of the question of Metaphysics again. This also makes possible a rethinking of the science-theology relation in a new light. The aim of this volume is precisely to shed a glimpse of this new light upon this ongoing conversation, by now involving Orthodox Theology in it. The possible contribution of Orthodox Theology to this discussion, in the context of the Christian Greek-Western world, can be path-breaking..." (From the Note of the Senior Editor) Contents: 1. Patristic Views On The Nature And Status Of Scientific Knowledge, JEAN-CLAUDE LARCHET, 2. The Dialogue between Orthodox Theology and Science as Explication of the Human Condition, ALEXEI NESTERUK, 3. Actor-Network Theory and Byzantine Philosophy, GEORGI KAPRIEV, 4. The Cosmos in the Bible and science, GEORGIOS GOUNARIS, 5. Quantum Physics and Christian Faith, JOHN BRECK, 6. Exploring Analogy of Debates to Approach the Encounter between Orthodox Theology and Quantum

Physics, STOYAN TANEV, 7. *Logic of Mystery: Reading Wittgenstein in parallel to Orthodox theology and quantum theory*, TIM LABRON, 8. *Psychoanalysis And Eschatology*, NIKOLAOS LOUDOVIKOS, 9. *Theology and the Discovery of the Unconscious: Preliminary Remarks*, NIKOLAOS LOUDOVIKOS, 10. *Ways of Comprehending*, ATHANASIOS FOKAS, 11. *Evolution, Genetics, and Nature: Implications for Orthodox*, GAYLE E. WOLOSCHACK

Physics of the Human Mind

Springer This book tackles the challenging question which mathematical formalisms and possibly new physical notions should be developed for quantitatively describing human cognition and behavior, in addition to the ones already developed in the physical and cognitive sciences. Indeed, physics is widely used in modeling social systems, where, in particular, new branches of science such as sociophysics and econophysics have arisen. However, many if not most characteristic features of humans like willingness, emotions, memory, future prediction, and moral norms, to name but a few, are not yet properly reflected in the paradigms of physical thought and theory. The choice of a relevant formalism for modeling mental phenomena requires the comprehension of the general philosophical questions related to the mind-body problem. Plausible answers to these questions are investigated and reviewed, notions and concepts to be used or to be taken into account are developed and some challenging questions are posed as open problems. This text addresses theoretical physicists and neuroscientists modeling any systems and processes where human factors play a crucial role, philosophers interested in applying philosophical concepts to the construction of mathematical models, and the mathematically oriented psychologists and sociologists, whose research is fundamentally related to modeling mental processes.

Quantum Mind and Social Science

Cambridge University Press A unique contribution to the understanding of social science, showing the implications of quantum physics for the nature of human society.

Enactive Cognition at the Edge of Sense-Making

Making Sense of Non-Sense

Springer The enactive approach replaces the classical computer metaphor of mind with emphasis on embodiment and social interaction as the sources of our goals and concerns. Researchers from a range of disciplines unite to address the challenge of how to account for the more uniquely human aspects of cognition, including the abstract and the nonsensical.

Physics and Necessity

Rationalist Pursuits from the Cartesian Past to the Quantum Present

Oxford University Press, USA Can we prove the necessity of our best physical theories by rational means, without appeal to experience? This book recounts a few ingenious attempts to derive physical theories by reason only, beginning with Descartes' geometric construction of the world, and finishing with recent derivations of quantum mechanics from natural axioms. It should be of great interest to anyone concerned with the foundations of physics and its broader philosophical interpretation.

Ernst Cassirer on Form and Technology

Contemporary Readings

Springer Ernst Cassirer's thought-provoking essay Form and Technology (1930) ascribes to technology a new dignity as a genuine tool of the mind in equal company with language and art. Translated here into English it is accompanied by critical essays that explore its current relevance.

Conceptual Development of 20th Century Field Theories

Cambridge University Press An overview of the conceptual and historical foundations of fundamental field theories, including their underlying issues, logic and dynamics.

Extraterrestrial Intelligence and Human Imagination

SETI at the Intersection of Science, Religion, and Culture

Springer The search for extraterrestrial intelligence (SETI) represents one of the most significant crossroads at which the assumptions and methods of scientific inquiry come into direct contact with—and in many cases conflict with—those of religion. Indeed, at the core of SETI is the same question that motivates many interested in religion: What is the place of humanity in the universe? Both scientists involved with SETI (and in other areas) and those interested in and dedicated to some religious traditions are engaged in contemplating these types of questions, even if their respective approaches and answers differ significantly. This book explores this intersection with a focus on three core points: 1) the relationship between science and religion as it is expressed within the framework of SETI research, 2) the underlying assumptions, many of which are tacitly based upon cultural values common in American society, that have shaped the ways in which SETI researchers have conceptualized the nature of their endeavor and represented ideas about the potential influence contact might have on human civilization, and 3) what sort of empirical evidence we might be able to access as a way of thinking about the social impact that contact with alien intelligence might have for humanity, from both religious and cultural perspectives. The book developed as a result of a course the author teaches at the University of Texas at Austin: Religion, Science, and the Search for Extraterrestrial Intelligence.

Reality and Negation - Kant's Principle of Anticipations of

Perception

An Investigation of its Impact on the Post-Kantian Debate

Springer Science & Business Media Kant, in the Critique of pure reason, only dedicates a few pages to the principle of Anticipations of Perception and only a few critical studies are outspokenly dedicated to this issue in recent critical literature. But if one considers the history of post-Kantian philosophy, one can immediately perceive the great importance of the new definition of the relationship between reality and negation, which Kant's principle proposes. Critical philosophy is here radically opposed to the pre-critical metaphysical tradition: "Reality" no longer appears as absolutely positive being, which excludes all negativity from itself, and "negation" is not reduced to being a simple removal, the mere absence of being. Instead, reality and negation behave as an equally positive something in respect to one another such that negation is itself a reality that is actively opposed to another reality. Such a definition of the relation between reality and negation became indispensable for post-Kantian Philosophy and represents a central aspect of Kantian-inspired philosophy in respect to Leibnizian metaphysics. The present work therefore departs from the hypothesis that the essential philosophical importance of the Anticipations of Perception can only be fully measured by exploring its impact in the Post-Kantian debate.

Self, Culture and Consciousness

Interdisciplinary Convergences on Knowing and Being

Springer This volume brings together the primary challenges for 21st century cognitive sciences and cultural neuroscience in responding to the nature of human identity, self, and evolution of life itself. Through chapters devoted to intricate but focused models, empirical findings, theories, and experiential data, the contributors reflect upon the most exciting possibilities, and debate upon the fundamental aspects of consciousness and self in the context of cultural, philosophical, and multidisciplinary divergences and

convergences. Such an understanding and the ensuing insights lie in the cusp of philosophy, neurosciences, psychiatry, and medical humanities. In this volume, the editors and contributors explore the foundations of human thinking and being and discuss both evolutionary/cultural embeddedness, and the self-orientation, of consciousness, keeping in mind questions that bring in the interdisciplinary complexity of issues such as the emergence of consciousness, relation between healing and agency, models of altered self, how cognition impacts the social self, experiential primacy as the hallmark of consciousness, and alternate epistemologies to understand these interdisciplinary puzzles.

The Map and the Territory

Exploring the Foundations of Science, Thought and Reality

Springer This volume presents essays by pioneering thinkers including Tyler Burge, Gregory Chaitin, Daniel Dennett, Barry Mazur, Nicholas Humphrey, John Searle and Ian Stewart. Together they illuminate the Map/Territory Distinction that underlies at the foundation of the scientific method, thought and the very reality itself. It is imperative to distinguish Map from the Territory while analyzing any subject but we often mistake map for the territory. Meaning for the Reference. Computational tool for what it computes. Representations are handy and tempting that we often end up committing the category error of over-marrying the representation with what is represented, so much so that the distinction between the former and the latter is lost. This error that has its roots in the pedagogy often generates a plethora of paradoxes/confusions which hinder the proper understanding of the subject. What are wave functions? Fields? Forces? Numbers? Sets? Classes? Operators? Functions? Alphabets and Sentences? Are they a part of our map (theory/representation)? Or do they actually belong to the territory (Reality)? Researcher, like a cartographer, clothes (or creates?) the reality by stitching multitudes of maps that simultaneously co-exist. A simple apple, for example, can be analyzed from several viewpoints beginning with evolution and biology, all the way down its microscopic quantum mechanical components. Is there a reality (or a real apple) out there apart from these maps? How do these various maps interact/intermingle with each other to produce a coherent reality that we interact with? Or do they not? Does our brain uses its own internal maps to facilitate "physicist/mathematician" in us to construct the maps about the external territories in turn? If so, what is the nature of these internal maps? Are there meta-maps? Evolution definitely fences our perception and thereby our ability to construct maps, revealing to us only

those aspects beneficial for our survival. But the question is, to what extent? Is there a way out of the metaphorical Platonic cave erected around us by the nature? While “Map is not the territory” as Alfred Korzybski remarked, join us in this journey to know more, while we inquire on the nature and the reality of the maps which try to map the reality out there. The book also includes a foreword by Sir Roger Penrose and an afterword by Dagfinn Follesdal.

The Universe in the Image of Imago Dei

The Dialogue between Theology and Science as a Hermeneutics of the Human Condition

Wipf and Stock Publishers Cosmology, anthropology, and Christology are deeply interrelated. This implies that one cannot talk about the structure of the world without human presence in it, as well as it is impossible to produce any reasonable understanding of humanity without positioning it in the universe. In the same fashion, in order to comprehend where the human capacity of predicating the universe comes from, one needs to appeal to humanity's Divine Image, that is, to its archetype in the incarnate Christ. Whereas Christians traditionally believe that the human phenomenon is unique as created in the Divine Image, such scientific disciplines as evolutionary biology, palaeoanthropology, the sciences of artificial intelligence, psychology, and others, challenge the vision of humanity as a unique formation thus challenging the doctrine of Imago Dei. All these disciplines place humans in a mediocre position in the world accompanied by the feeling of anxiety, insecurity, and non-attunement to the universe. Theology needs to respond to these challenges by incorporating into its scope the data from the sciences in order to neutralize such anxieties. The resulting dialogue of theology with science provides a hermeneutics of the human condition with no objective to change the latter. Then the sense of the universe is disclosed from within the Divine Image reflecting the predicaments of the human created condition.