

The Tenseless Theory Of Time A Critical Examination

The present volume is part of a larger project, which is the attempt to draft a coherent doctrine of divine eternity and God's relationship to time. In my *God, Time, and Eternity*, I argued that whether one construes divine eternity in terms of timelessness or of omnitemporality will depend crucially upon one's views about the objectivity of tensed facts and temporal becoming. If one adopts a tensed, or in McTaggart's terminology, an A-Theory of time, then a coherent doctrine of divine eternity requires that one construe God, at least since the moment of creation, to exist temporally, which implies that divine timelessness can be successfully maintained only if a tenseless or B-Theory of time is correct. Accordingly in my companion volumes *The Tensed Theory of Time: a Critical Examination* and *The Tenseless Theory of Time: a Critical Examination* I set for myself the task of adjudicating the A- vs. B-Theory of time. In the former volume; I examine arguments for and against the A-Theory of time, and in the latter I turn to an examination of arguments for and against the B-Theory. This inquiry took me into a study of relativity theory, its presuppositions and implications. The paucity of integrative literature dealing with the concept of God and relativity theory is striking. This book offers a defense of the tensed theory of time, a critique of the New Theory of Reference, and an argument that simultaneity is absolute. Although Smith rejects ordinary language philosophy, he shows how it is possible to argue from the nature of language to the nature of reality. Specifically, he argues that semantic properties of tensed sentences are best explained by the hypothesis that they ascribe to events temporal properties of futurity, presentness, or pastness and do not merely ascribe relations of earlier than or simultaneity. He criticizes the New Theory of Reference, which holds that "now" refers directly to a time and does not ascribe the property of presentness. Smith does not adopt the old or Fregean theory of reference but develops a third alternative, based on his detailed theory of *de re* and *de dicto* propositions and a theory of cognitive significance. He concludes the book with a lengthy critique of Einstein's theory of time. Smith offers a positive argument for absolute simultaneity based on his theory that all propositions exist in time. He shows how Einstein's relativist temporal concepts are reducible to a conjunction of absolutist temporal concepts and relativist nontemporal concepts of the observable behavior of light rays, rigid bodies, and the like.

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The central question in the philosophy of time is whether time is tensed or tenseless, viz., whether the moments of time are objectively past, present or future, or whether they are ordered merely by the tenseless temporal relations earlier than, simultaneous with, and later than. In this book and the companion volume *The Tensed Theory of Time: A Critical Examination*, Craig undertakes the first thorough appraisal of the arguments for and against the tensed and tenseless theories of time. The discussions range widely over issues in the philosophy of language, phenomenology, relativity theory, philosophy of space and time, metaphysics, and philosophy of religion. The *Tenseless Theory of Time* sets out to discover whether the ineliminability of tense from language and our experience of tense warrants a belief in its objective ontological status, or whether the defeaters raised by McTaggart's paradox and the Myth of Passage serve to undermine any warrant that the tensed theory of time may be

supposed to enjoy.

The present book and its companion volume *The Tensed Theory of Time: A Critical Examination* are an attempt to adjudicate what one recent discussant has called "the most fundamental question in the philosophy of time," namely, "whether a static or a dynamic conception of the world is correct." I had originally intended to treat this question in the space of a single volume; but the study swelled into two. I found that an adequate appraisal of these two competing theories of time requires a wide-ranging discussion of issues in metaphysics, philosophy of language, phenomenology, philosophy of science, philosophy of space and time, and even philosophy of religion, and that this simply could not be done in one volume. If these volumes succeed in making a contribution to the debate, it will be precisely because of the synoptic nature of the discussion therein. Too often the question of the nature of time has been prematurely answered by some philosopher or physicist simply because he is largely ignorant of relevant discussions outside his chosen field of expertise. In these two complementary but independent volumes I have attempted to appraise what I take to be the most important arguments drawn from a variety of fields for and against each theory of time.

Studies in Analytic Philosophy Series Editor: Quentin Smith, Western Michigan University
[T]his is an excellent book. It represents an exceptionally useful guide to nearly all aspects of the contemporary debate ... [and] is an excellent, insightful and powerful contribution to the debate and should be read by everyone working on the philosophy of time.
-The Philosophical Quarterly
Nathan Oaklander has for many years been the most indefatigable and effective developer and champion of the new - and true - tenseless theory of time. This book is an invaluable collection of his major papers on the topic, many of them not easily accessible elsewhere. It is a formidable armoury of arguments for the tenseless theory, and against its rivals, in both its ontological and its semantic aspects. Oaklander's detailed responses to his many allies and opponents down the years also make his book an indispensable guide to the recent history of work in the philosophy of time.
-D. H. Mellor, Emeritus Professor of Philosophy, Cambridge University
What emerges very strongly from these essays is a conviction that significant and exciting metaphysical results can be extracted by a careful and rigorous attention to the nature of temporal language, and a deep sense of the human relevance of the philosophy of time, as evidenced by the subtle connections drawn here between time, experience, identity and freedom. The collection as a whole is a testament to Nathan Oaklander's place at the forefront of contemporary metaphysics.
-Robin Le Poidevin, Professor of Metaphysics, University of Leeds
This book is a carefully edited and cross-referenced compilation of some of Professor Oaklander's most significant work in the philosophy of time, and serves beautifully as both an up-to-date reference as well as an introduction to the ongoing debate between 'tenser' A-theorists and 'detenser' B-theorists. Not only does Professor Oaklander herein offer up the latest version of the 'new' B-theory of time, of which he is a chief architect, but he outlines a 'newer' B-theory of language that may well untangle the riddle of how tensed language may be essential to daily life, yet itself depend only upon tenseless facts for its ultimate significance.
-Professor V. Alan White, University of Wisconsin--Manitowoc
[A] sustained defense of the new B-theory of time and a penetrating critique of a range of A-theories of time. . . . an impressively coherent and unified work constituting one of the most

complete and thorough defences of the new B-theory to appear in recent years.-Heather Dyke, Senior Lecturer in Philosophy, University of Otago, New Zealand

L. Nathan Oaklander is one of the leading philosophers of time defending the tenseless or B-Theory of time. He has remained at the forefront of this field since the early 1980s and today he is arguably the most formidable opponent of the tensed or A-theory of time. Much of the direction of the debate in this field for the past twenty years or so, especially in regards to the new tenseless theory of time, has been influenced by Oaklander's work. This book presents a carefully argued defense of the tenseless theory of time. The topics discussed include: the ontology of A- and B-theories of time; presentism; the open future theory; the A/B theory; defending the B-theory of time; temporal experience; temporal semantics; and time, identity, responsibility, and freedom.

L. Nathan Oaklander (Flint, MI) is professor of philosophy and chair of the Department of Philosophy at the University of Michigan, Flint. He is the author or editor of numerous books on philosophy and the problem of time, including *Time, Change and Freedom* and *The Importance of Time*.

The former Queen of Science seems to be lacking both a specific subject and a particular method. Thus the need arises for intra- and metaphilosophical orientation – especially since the way philosophy sees itself stems from various influential schools and traditions whose mutual exchange is not as lively as one might have hoped. This volume of original essays brings together some of the protagonists of different metaphilosophical debates that have so far been led fairly independently of each other. The authors discuss the question of both the possibility and the scope of philosophical knowledge under a variety of aspects, particularly: (1) a priori knowledge and the role of intuitions, (2) transcendental arguments, (3) analytic philosophy and its methods as well as (4) phenomenology and analytic philosophy.

The Philosophy of Time Society grew out of a National Endowment for the Humanities Summer Seminar on the Philosophy of Time offered by George Schlesinger in 1991. The members of that seminar wanted to promote interest in the philosophy of time and Jon N. Turgerson offered to become the first Director of the society with the initial costs underwritten by the Drake University Center for the Humanities. Thus, the Philosophy of Time Society (PTS) was formed in 1993. Its goal is to promote the study of the philosophy of time from a broad analytic perspective, and to provide a forum as an affiliated group with the American Philosophical Association, to discuss the issues in and related to the philosophy of time. The society held its first meeting during the Eastern Division of the AP A in Atlanta, Georgia, in December 1993. In 1997 I began my tenure as Executive Director of PTS and with my term ending in 2000, I decided to put together a volume of selected papers read at PTS meetings over the years. The result is the present volume. It contains some of the latest developments in the field, including discussions of recent books by Michael Tooley, *Time, Tense, and Causation*, and D. H. Mellor, *Real Time II*, and much more. The main issue in the philosophy of time is and remains the status of temporal becoming and the passage of time.

The present book and its companion volume *The Tenseless Theory of Time: A Critical Examination* are an attempt to adjudicate what one recent discussant has called "the most fundamental question in the philosophy of time," namely, "whether a static or a dynamic conception of the world is correct." I had originally intended to treat this question in the space of a single volume; but the study swelled into two. I found that an adequate appraisal of these two of time requires a wide-ranging discussion of issues in competing theories metaphysics, philosophy of language, phenomenology, philosophy of science, philosophy of space and time, and even philosophy of religion, and that this simply could not be done in one volume. If these

volumes succeed in making a contribution to the debate, it will be precisely because of the synoptic nature of the discussion therein. Too often the question of the nature of time has been prematurely answered by some philosopher or physicist simply because he is largely ignorant of relevant discussions outside his chosen field of expertise. In these two complementary but independent volumes I have attempted to appraise what I take to be the most important arguments drawn from a variety of fields for and against each theory of time.

This book is intended as an exposition of a particular theory of time in the sense of an interrelated set of attempted solutions to philosophical problems about it. Generally speaking there are two views about time held by philosophers and some scientists interested in philosophical issues. The first called the A-theory (after McTaggart's expression A-determinations for the properties of being past, present or future) is often thought to be closer to our commonsense view of time or to the concept of time presupposed by ordinary language. It includes at least the following theses, (a) Logic ought really to include tensed quantifiers for existence on one of its important usages means, present existence. More generally, we can't reduce all tensed locutions to tenseless ones. (b) The distinction between past, present and future is an objective one. It is not, for example, dependent on our consciousness of change; some A-theorists hold also, that the distinction, in effect, is an absolute one.

I defend and develop the new tenseless token-reflexive theory of time. I begin by charting the development of the debate between the tensed and the old tenseless theories of time. The tensed theory of time maintains that time exists and is intrinsically tensed. According to the old tenseless theory, time exists and is intrinsically tenseless, the notions of past, present and future being analytically reducible to tenseless temporal relations. The new tenseless theory of time concedes that tense is an irreducible feature of language and thought. However, it rejects the claim of the tensed theory that tense is an irreducible feature of temporal reality. Tensed sentences have truth conditions statable in entirely tenseless terms, so the irreducibility of tensed language and thought does not imply that the metaphysical nature of time is such that it is intrinsically tensed. The new tenseless theory of time must be defended on two fronts. It must be shown that the truth conditions of tensed sentences can indeed be stated in entirely tenseless terms. I consider and reject the date version of the new tenseless theory of time. I then consider and defend the token-reflexive version of this theory. It must also be shown that tense is not a feature of reality. I argue that the notion of tense has two essential features. It involves the ontological distinction between past, present and future, and the objective reality of temporal becoming. A careful examination of these two essential features reveals that they cannot, under any interpretation, be consistently held together. The supposition that tense is an objective feature of reality is thus logically unsustainable. I develop the new tenseless token-reflexive theory of time in three substantial areas. I argue that, despite appearances, there is no analogy between this theory of time and the theory of genuine modal realism, according to which all possible worlds, including the world we inhabit, are equally real. This comparative analysis between these two theories reveals that the new tenseless theory of time is on firmer ground than both its apparent modal counterpart and various tensed theories of time. I undertake a conceptual analysis of the notion of the direction of time. I argue that the tensed theory of time is singularly unable to account for this notion, while the new tenseless theory has the conceptual equipment necessary to provide a satisfactory and perspicuous account of it. Finally, I consider the notion of tensed meaning. I argue that the distinction between character and content can be combined with the token-reflexive account of the truth conditions of tensed sentences to yield a highly illuminating account of tensed meaning that is consistent with a tenseless ontology.

This book brings together, in a novel way, an account of the structure of time with an account of our language and thought about time. Joshua Mozersky argues that it is possible to reconcile the human experience of time, which is centred on the present, with the objective

conception of time, according to which all moments are intrinsically alike. He defends a temporally centreless ontology along with a tenseless semantics that is compatible with - and indeed helps to explain the need for - tensed language and thought. This theory of time also, it is argued, helps to elucidate the nature of change and temporal passage, neither of which need be denied nor relegated to the realm of subjective experience only. The book addresses a variety of topics including whether the past and future are real; whether temporal passage is a genuine phenomenon or merely a subjective illusion; how the asymmetry of time is to be understood; the nature of representation; how something can change its properties yet retain its identity; and whether objects are three-dimensional or four-dimensional. It is a wide-ranging examination of recent issues in metaphysics, philosophy of language and the philosophy of science and presents a compelling picture of the relationship of human beings to the spatiotemporal world.

L. Nathan Oaklander is one of the leading philosophers of time defending the tenseless or B-Theory of time. He has remained at the forefront of this field since the early 1980s and today he is arguably the most formidable opponent of the tensed or A-theory of time. Much of the direction of the debate in this field for the past twenty years or so, especially in regards to the new tenseless theory of time, has been influenced by Oaklander's work. This book presents a carefully argued defense of the tenseless theory of time. The topics discussed include: the ontology of A- and B-theories of time; presentism; the open future theory; the A/B theory; defending the B-theory of time; temporal experience; temporal semantics; and time, identity, responsibility, and freedom.

A new view of the metaphysics of time, arguing that the traditional tensed-tenseless debate within analytic philosophy should be seen as the first stage in a philosophical investigation of time, and that the next stage belongs to phenomenology. How does time pass? Does time itself move, or is time's passage merely an illusion? Analytic philosophers belong, for the most part, to one of two camps on this question: the tensed camp, which defends the reality of time's passage, conceiving the present as "ontologically privileged" over the past and future; and the tenseless camp, which denies time's passage and holds that all events, whatever their temporal location, are ontologically equal. In *Time and Realism*, Yuval Dolev goes beyond the tensed-tenseless debate to argue that neither position is conclusive but that the debate over them should be seen as only the first stage in the philosophical investigation of time. The next stage, he claims, belongs to phenomenology, and, he argues further, the phenomenological analysis of time grows naturally out of the analytic enterprise. Dolev shows that the two rival theories share a metaphysical presupposition: that tense concerns the ontological status of things. He argues that this ontological assumption is natural but untenable, and that leaving it behind creates a new viewpoint from which to study central topics in the metaphysics of time. Dolev shows that such a study depends on the kind of meticulous attention to our firsthand experiences that drives phenomenological investigations. Thus, he argues, phenomenology is the venue for advancing the investigation of time. *Time and Realism* not only analyzes the tensed-tenseless debate, resolving some of its central difficulties along the way, it transcends it. It serves as a bridge between the analytic and the continental traditions in the philosophy of mind, both of which are shown to be vital to the philosophical examination of time. Yuval Dolev is Professor of Philosophy at Bar Ilan University, Israel.

Questions of Time and Tense brings together new essays on a major focus of debate in contemporary metaphysics: does time really pass, or is our ordinary experience of time as consisting of past, present, and future an illusion? The international line-up of contributors broaden this debate by demonstrating the importance of questions about the nature of time for philosophical issues in ethics, aesthetics, psychology, science, religion, and language.

The last century has seen enormous progress in our understanding of time. This volume features original essays by the foremost philosophers of time discussing the goals and methodology of the philosophy of time, and examining the best way to move forward with regard to the field's core issues. The collection is unique in combining cutting edge work on time with a focus on the big picture of time studies as a discipline. The major questions asked include: What are the implications of relativity and quantum physics on our understanding of time? Is the passage of time real, or just a subjective phenomenon? Are the past and future real, or is the present all that exists? If the future is real and unchanging (as contemporary physics seems to suggest), how is free will possible? Since only the present moment is perceived, how does the experience as we know it come about? How does experience take on its character of a continuous flow of moments or events? What explains the apparent one-way direction of time? Is time travel a logical/metaphysical possibility?

An interesting and thought-provoking study of issues in the philosophy of time. This book is the first book-length study of the nature of time and persistence in Spinoza. It will be of interest to anyone interested in Modern Philosophy or Metaphysics. Original essays on the metaphysics of time, identity, and the self, written by distinguished scholars and important rising philosophers.

An account of time given in purely tenseless terms seems intuitively incomplete in a number of different ways. It does not seem to do justice to our experience of time, it does not seem to explain our asymmetric attitudes towards past and future, and it fails to tell us which times are respectively past, present, or future. Chapters 1 through 3 are devoted to explaining the tensed-tenseless debate and how this apparent incompleteness, which I call the Gap, provides the grounds for many tensed theorists' arguments against the tenseless theory of time. As I show in Chapter 4, however, the tensed theorists' accounts of time appear to suffer from the Gap in the same or similar ways. And any way of undermining it that might be available to the tensed theorist is equally available to the tenseless theorist. Since no view of time can quite address the Gap in the way demanded by some tensed theorists, the root of the Gap is likely to be in the ways we encounter the world rather than in the metaphysical nature of time itself. To investigate this claim, in Chapter 5 I build the beginnings of a rough account of our perspectival outlook on time, based itself on an account of tense and why in fact we need tensed representations for action in the first place. As explained further in Chapter 6, such an account of our outlook, it turns out, may be compatible with either tenseless or tensed views of time. If so, then the Gap neither provides any evidence against the tenseless view, nor does it show the tensed view to be the default or common sense view as so many philosophers seem to think.

Michael Tooley presents a major new philosophical study of time and its relation to causation. The nature of time has always been one of the most fascinating and perplexing problems of philosophy; it has in recent years become the focus of vigorous debate between advocates of rival theories. The traditional, 'tensed' accounts of time which hold that time has a direction and that the flow of time is part of the nature of the universe have been challenged by 'tenseless' accounts of time, according to which past, present, and future are merely subjective features of experience, rather than objective features of events. *Time, Tense and Causation* offers a new approach, in many ways intermediate between these two rivals. Tooley shares with tensed

approaches the views that the universe is dynamic, and that the past and present are real while the future is not; but he rejects the view that this points to the existence of irreducible tensed facts. Tooley's approach accounts for time in terms of its relation to causation; he argues that the direction of time is based upon the direction of causation, and that the key to understanding the dynamic nature of the universe is to understand the nature of causation. He analyses tensed concepts, and discusses semantic issues about truth and time. Finally, addressing the formidable difficulties posed for tensed accounts of time by the Special Theory of Relativity, he suggests that a modified version of the theory, compatible with the account of time in this book, is to be preferred to the standard version. Time, Tense, and Causation is rich in sophisticated and stimulating discussions of many of the deepest problems of metaphysics. It will be essential reading for anyone specialising in this area of philosophy.

A core topic in metaphysics, time is also central to issues in the philosophy of science, the philosophy of mind and the philosophy of religion. Debates in the Metaphysics of Time explores these close philosophical connections and tackles the contemporary debates using an interactive approach. Contributors put forward their views before commenting on the ideas of other contributors and defending against objections. Divided into 'metaphysics and time', 'consciousness and time' and 'God, time and human freedom', chapters are organized around key questions, including:

- How are we to understand the passage of time, or the 'change' an event seems to undergo when it moves from the future to the present and then recedes into the more and more distant past?
- Can we only be directly aware of what is momentary if we directly experience change and duration?
- How is God related to time and is divine foreknowledge and human freedom compatible?

For students and researchers looking to understand the latest arguments in the philosophy of time, Debates in the Metaphysics of Time provides an original, up-to-date and accessible account of past, present and future debates.

First published in 1995. Routledge is an imprint of Taylor & Francis, an information company.

In this highly original and ground-breaking work, the author brings together discussions in the philosophy of time and space, philosophy of language, phenomenology, philosophy of science, Special and General Relativity, classical cosmology, quantum mechanics, and so forth, with the concerns of philosophy of religion and theology, in order to craft a philosophically informed and scientifically tenable doctrine of divine eternity and God's relationship to time.

What is time? The 5th-century philosopher St Augustine famously said that he knew what time was, so long as no one asked him. Is time a fourth dimension similar to space or does it flow in some sense? And if it flows, does it make sense to say how fast? Does the future exist? Is time travel possible? Why does time seem to pass in only one direction? These questions and others are among the deepest and most subtle that one can ask, but "Introducing Time" presents them - many for the first time - in an easily accessible, lucid and engaging manner, wittily illustrated by Ralph Edney.

One of the vital issues in contemporary Christian theology is the problem of a renewed understanding of God's eternity and its relation to time. This is not merely a peripheral doctrinal issue, but lies at the heart of our understanding of God and humanity, and contributes to our entire worldview. This study focuses on a long-standing debate between two competing views on God's eternity: one focused on God's absolute timelessness in classical theism, and the other on God's temporal everlastingness in contemporary panentheism. In contrast to both of these well-worn options, this book presents an alternative Trinitarian analogical understanding of God's eternity and its relation to time, especially through a critical reflection on Karl Barth's and Hans Urs von Balthasar's engagement of the issue. This analogical approach, based on the dynamic and dramatic concepts of God's being-in-relation and of the Triune God's communicative action in eternity and time, has the potential to resolve the debate between absolute timeless eternity and temporal everlasting duration.

In a series of thought-provoking and original essays, eighteen leading philosophers engage in head-to-head debates of nine of the most cutting edge topics in contemporary metaphysics. Explores the fundamental questions in contemporary metaphysics in a series of eighteen original essays - 16 of which are newly commissioned for this volume. Features an introductory essay by the editors on the nature of metaphysics to prepare the reader for ongoing discussions. Offers readers the unique opportunity to observe leading philosophers engage in head-to-head debate on cutting-edge metaphysical topics. Provides valuable insights into the flourishing field of contemporary metaphysics.

Presentism, the view that only the present exists, was a much neglected position in the philosophy of time for a number of years. Recently, however, it has been enjoying a renaissance among philosophers. A Future for Presentism is meant as a timely contribution to this fast growing and exciting debate. After discussing rival positions in the philosophy of time, in Part I Craig Bourne shows how presentism is the only viable alternative to the tenseless theory of time. He then develops a distinctive version of presentism that avoids the mistakes of the past, and which sets up the framework for solving problems traditionally associated with the position, such as what makes past-tensed statements true, how to give the proper semantics for statements about the future, how to deal with transtemporal relations, how we can meaningfully talk about past individuals, and how causation can be accommodated. Part I concludes with a discussion of the direction of time and causation, the decision-theoretic problem known as 'Newcomb's problem', and the possibility of time travel and causal loops. In Part II Bourne focuses on the problems for presentism raised by relativity theory. He begins with by giving a self-contained exposition of the concepts of special relativity that are important for understanding the later discussion of its philosophical implications. The last two chapters explore the philosophical implications of certain cosmological models that arise from general relativity,

namely the expanding models, which seem to represent our universe, and Gödel's infamous model, which allows us to take a journey into our future and arrive in our past. The necessary physics is explained with the aid of diagrams, throughout.

"The most important debate among twentieth-century philosophers of time has been whether events that have happened, are happening, or will happen are equally real (the tenseless theory of time) or whether there is a fundamental distinction between past, present, and future, with only present events possessing full existence (the tensed theory). In the 1980s a new version of the tenseless theory of time emerged. While advocates still posit that all events are equally real, they depart from the old tenseless theory by conceding that tensed expressions cannot be translated into tenseless ones, and support their view of time using other arguments." "This anthology offers the latest turns in the debate over the new theory of time, with essays written by many of the most prominent contemporary thinkers in the philosophy of time. There are discussions on the role - or nonrole - of language in determining which theory is true; McTaggart's paradox and the logical difficulties that defenders of the tenseless theory say are inherent in tensed theory; and the nature of our experience of time, which proponents of both theories claim can now be explained. The Preface and the General Introduction to the book set the debate within the wider philosophical context and show why the subject of temporal becoming is a perennial concern of science, religion, language, logic, and the philosophy of mind."--BOOK

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Among the many branches of philosophy, the philosophy of time and the philosophy of language are more intimately interconnected than most, yet their practitioners have long pursued independent paths. This book helps to bridge the gap between the two groups. As it makes clear, it is increasingly difficult to do philosophy of language without any metaphysical commitments as to the nature of time, and it is equally difficult to resolve the metaphysical question of whether time is tensed or tenseless independently of the philosophy of language. Indeed, one is tempted to see philosophy of language and metaphysics as a continuum with no sharp boundary. The essays, which were written expressly for this book by leading philosophers of language and philosophers of time, discuss the philosophy of language and its implications for the philosophy of time and vice versa. The intention is not only to further dialogue between philosophers of language and of time but also to present new theories to advance the state of knowledge in the two fields. The essays are organized in two sections—one on the philosophy of tensed language, the other on the metaphysics of time. Original essays by philosophers of language and philosophers of time exploring the semantics and metaphysics of tense.

How was the hypothetical character of theories of experience thought about throughout the history of science? The essays cover periods from the middle

