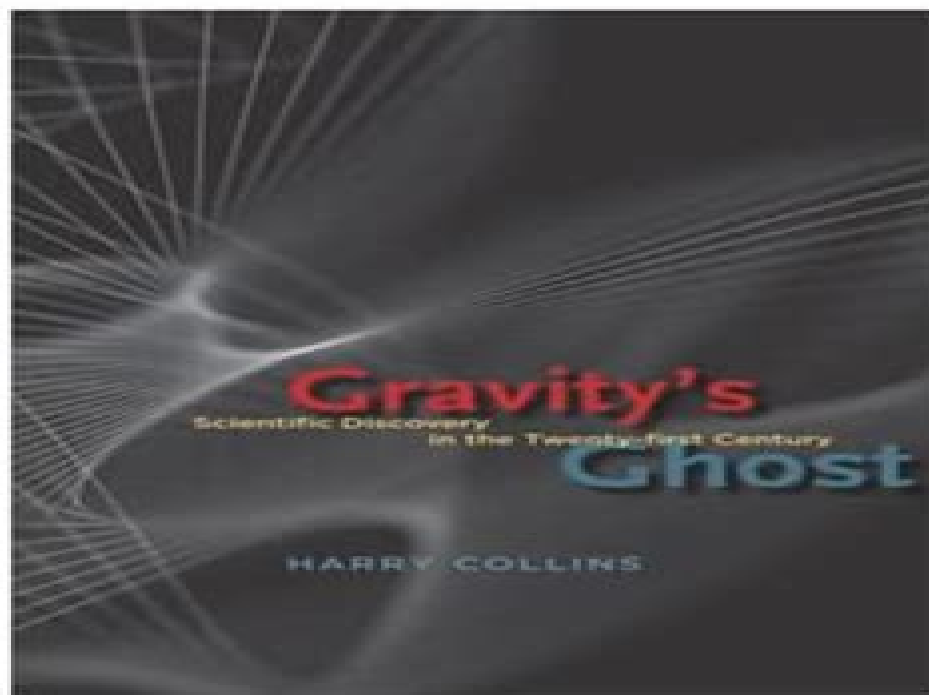


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Gravitys Ghost Scientific Discovery In The Twenty First Century

Sophie J Veigl, Adrian Currie



Gravity's Ghost Scientific Discovery In The Twenty First Century:

Gravity's Ghost Harry Collins, 2011 In the end Gravity's Ghost shows that discoveries are the denouements of dramatic scientific mysteries

Gravity's Ghost and Big Dog Harry Collins, 2022-12-22 In part an account of sociological fieldwork among scientists in the field and part astronomy history mystery a terrific read Nature Gravity's Ghost and Big Dog brings to life science's efforts to detect cosmic gravitational waves These ripples in space time are predicted by general relativity and their discovery will not only demonstrate the truth of Einstein's theories but also transform astronomy Although no gravitational wave has ever been directly detected the previous five years have been an exciting period in the field Sociologist Harry Collins offers readers an unprecedented view of the research and explains what it means for an analyst to do work of this kind Collins was embedded with the gravitational wave physicists as they confronted two possible discoveries Big Dog fully analyzed in this volume for the first time and the Equinox Event which was first chronicled by Collins in Gravity's Ghost Collins records the agonizing arguments that arose as the scientists worked out what they had seen and how to present it to the world along the way demonstrating how even the most statistical of sciences rest on social and philosophical choices Gravity's Ghost and Big Dog draws on nearly fifty years of fieldwork observing scientists at the American Laser Interferometer Gravitational Wave Observatory and elsewhere around the world to offer an inspired commentary on the place of science in society today The physics junkie or philosophy of science enthusiast will find lots to mull over Science News Makes for very entertaining reading Daniel Kennefick University of Arkansas author of Traveling at the Speed of Thought

Gravity's Ghost Harry Collins, 2010-12-15 A gripping look at gravitational wave research and what it says about scientific discovery and the future of the scientific community This fine book pairs exploratory analysis with the pulse of a detective story Giving a portrait of the way a community chose to test itself on the threshold of new knowledge Collins offers the rich sociological insight that can only be won from uncommon experience from a long standing dialogue with the community he studies and from a moral engagement in the future of science Richard Staley author of Einstein's Generation The Origins of the Relativity Revolution In theory at least gravitational waves do exist We are constantly bathed in gravitational radiation which is generated when stars explode or collide and a portion of their mass becomes energy that ripples out like a disturbance on the surface of a serene pond But unfortunately no gravitational wave has ever been directly detected even though the search has lasted more than forty years As the leading chronicler of the search for gravitational waves Harry Collins has been right there with the scientists since the start The result of his unprecedented access to the front lines of physical science is Gravity's Ghost a thrilling chronicle of high stakes research and cutting edge discovery Here Collins reveals that scientific discovery and nondiscovery can turn on scientific traditions and rivalries that ideal statistical analysis rests on impossible procedures and unattainable knowledge and that fact in one place is baseless assumption in another He also argues that sciences like gravitational wave detection in exemplifying how the intractable is to be handled

can offer scientific leadership a moral beacon for the twenty first century In the end Gravity's Ghost shows that discoveries are the denouements of dramatic scientific mysteries A sociologist embedded with full access in the LIGO Scientific Collaboration chronicles the search for gravitational waves Though physicists with very few exceptions are in no doubt that gravitational waves exist evidence for their passage through the new kilometer length interferometers would nevertheless represent the scientific event of the twenty first century Harry Collins has turned the initial joined search exploiting the LIGO and Virgo instruments into a detective novel that exquisitely describes the social processes associated with discovery and statistical analysis in a large collaborative effort Francis Halzen University of Wisconsin Madison and Director of Icecube Neutrino Detector Project

Forms of Life Harry Collins, 2019-02-12 A concise accessible and engaging guide for students and practitioners of sociology In Forms of Life Harry Collins offers an introduction to social science methodology drawing on his forty plus years of conducting high profile sociological research In this concise accessible and engaging book Collins explains not only how to do sociology the method but also how to think about sociology the meaning For example he describes the three activities that are the foundations of sociological method immersing oneself in a society estranging oneself from that society and explaining what has been discovered to those who have not been immersed and goes on to consider broader questions of the meaning of science in relation to social science and the scientific authority of subjective methods He explains that sociology is the study of social collectivities often overlapping subdividable and embedded and cites Wittgenstein's notion of forms of life in his definition of collectivity Collins covers such methodological topics as participant comprehension interview based fieldwork expert plans to fail interactional expertise alternation and methodological relativism tangible and inferential experiments tribalism and emotional loyalty and how to communicate your findings Finally he offers recommendations for saving the science of sociology considering among other things sociology's identity as a discipline and the perils of both groupism and being too afraid of it Appendixes offer a code of conduct for interviews a list of his relevant publications and an account in Q A form of a disastrous day in the life of a sociologist doing fieldwork

On Gravity Anthony Zee, 2020-03-10 Of the four fundamental forces of nature gravity might be the least understood and yet the one with which we are most intimate From the months each of us spent suspended in the womb anticipating birth to the moments when we wait for sleep to transport us to other realities we are always aware of gravity In On Gravity physicist A Zee combines profound depth with incisive accessibility to take us on an original and compelling tour of Einstein's general theory of relativity Inspired by Einstein's audacious suggestion that spacetime could ripple Zee begins with the stunning discovery of gravity waves He goes on to explain how gravity can be understood in comparison to other classical field theories presents the idea of curved spacetime and the action principle and explores cutting edge topics including black holes and Hawking radiation Zee travels as far as the theory reaches leaving us with tantalizing hints of the utterly unknown from the intransigence of quantum gravity to the mysteries of dark matter and energy Concise and precise

and infused with Zee's signature warmth and freshness of style. On Gravity opens a unique pathway to comprehending relativity and gaining deep insight into gravity spacetime and the workings of the universe. Publisher's website

Reproducibility Harald Atmanspacher, Sabine Maasen, 2016-07-05 2017 PROSE Award Honorable Mention The PROSE Awards draw attention to pioneering works of research and for contributions to the conception, production and design of landmark works in their fields. Featuring peer-reviewed contributions from noted experts in their fields of research. Reproducibility: Principles, Problems, Practices and Prospects presents state-of-the-art approaches to reproducibility, the gold standard of sound science, from multi- and interdisciplinary perspectives. Including comprehensive coverage for implementing and reflecting the norm of reproducibility in various pertinent fields of research, the book focuses on how the reproducibility of results is applied, how it may be limited, and how such limitations can be understood or even controlled in the natural sciences, computational sciences, life sciences, social sciences, and studies of science and technology. The book presents many chapters devoted to a variety of methods and techniques as well as their epistemic and ontological underpinnings, which have been developed to safeguard reproducible research and curtail deficits and failures. The book also investigates the political, historical, and social practices that underlie reproducible research in contemporary science studies, including the difficulties of good scientific practice and the ethos of reproducibility in modern innovation societies. Reproducibility: Principles, Problems, Practices and Prospects is a guide for researchers who are interested in the general and overarching questions behind the concept of reproducibility, for active scientists who are confronted with practical reproducibility problems in their everyday work, and for economic stakeholders and political decision makers who need to better understand the challenges of reproducibility. In addition, the book is a useful in-depth primer for undergraduate and graduate-level courses in scientific methodology and basic issues in the philosophy and sociology of science from a modern perspective. A comprehensive, insightful treatment of the reproducibility challenges facing science today and of ways in which the scientific community can address them. Kathleen Hall Jamieson, Elizabeth Ware Packard, Professor of Communication, University of Pennsylvania. How can we make sure that reproducible research remains a key imperative of scientific communication under increasing commercialization, media attention, and publication pressure? This handbook offers the first interdisciplinary and fundamental treatment of this important question. Torsten Hothorn, Professor of Biostatistics, University of Zurich. Harald Atmanspacher, PhD, is Associate Fellow and staff member at Collegium Helveticum, ETH and University of Zurich, and is also President of the Society for Mind-Matter Research. He has pioneered advances in complex dynamical systems research and in a number of topics concerned with the relation between the mental and physical. Sabine Maasen, PhD, is Professor for Sociology of Science and Director of the Munich Center for Technology in Society, TU Munich, and Associate Fellow at Collegium Helveticum, ETH and University of Zurich. Her research focuses on the interface of science, technology, and society, notably with respect to neuroscience and its applications.

Discovery and Classification in Astronomy Steven J. Dick, 2013-09-09 This book

shows that astronomical discovery is a complex and ongoing process comprising various stages of research interpretation and understanding **Philosophy of Astrophysics** Nora Mills Boyd,Siska De Baerdemaeker,Kevin Heng,Vera Matarese,2023-06-28 This is an open access book This book the first edited collection of its kind explores the recent emergence of philosophical research in astrophysics It assembles a variety of original essays from scholars who are currently shaping this field and it combines insightful overviews of the current state of play with novel significant contributions It therefore provides an ideal source for understanding the current debates in philosophy of astrophysics and it offers new ideas for future cutting edge research The selection of essays offered in this book addresses methodological and metaphysical questions that target a wide range of topics including dark matter black holes astrophysical observations and modelling The book serves as the first standard resource in philosophy of astrophysics for all scholars who work in the field and want to expand or deepen their knowledge but it also provides an accessible guide for all those philosophers and scientists who are interested in getting a first basic understanding of the main issues in philosophy of astrophysics

Gravity Brian Clegg,2012-05-22 A history of gravity and a study of its importance and relevance to our lives as well as its influence on other areas of science Physicists will tell you that four forces control the universe Of these gravity may be the most obvious but it is also the most mysterious Newton managed to predict the force of gravity but couldn t explain how it worked at a distance Einstein picked up on the simple premise that gravity and acceleration are interchangeable to devise his mind bending general relativity showing how matter warps space and time Not only did this explain how gravity worked and how apparently simple gravitation has four separate components but it predicted everything from black holes to gravity s effect on time Whether it s the reality of anti gravity or the unexpected discovery that a ball and a laser beam drop at the same rate gravity is the force that fascinates Science, technology and society for a post-truth age: Comparative dialogues on reflexivity Emine Öncüler Yayalar,Melike Şahinol,2024-02-06 In an era shaped by misinformation conspiracy theories and anti science movements Science and Technology Studies Science Technology and Society STS provides a lighthouse of insight and interdisciplinary research This volume Science technology and society for a post truth age Comparative dialogues on reflexivity embarks on a transformative journey through the interdependencies of science technology and society offering vital perspectives and new insights on these challenging topics This book written by scholars in the field reshapes post truth discourse through STS and positions STS as a central force in addressing the post truth crisis It presents a compelling contribution that anchors STS at the heart of contemporary debates about truth and knowledge Science technology and society for a post truth age Comparative dialogues on reflexivity is a contemporary and thought provoking exploration of the evolving relationship between knowledge truth and society It makes the case that STS is a catalyst for reshaping our understanding of truth in an age characterised by scepticism and uncertainty *Making Time on Mars* Zara Mirmalek,2020-04-07 An examination of how the daily work of NASA s Mars Exploration Rovers was organized across three

sites on two planets using local Mars time In 2004 mission scientists and engineers working with NASA's Mars Exploration Rovers MER remotely operated two robots at different sites on Mars for ninety consecutive days An unusual feature of this successful mission was that it operated on Mars time the daily work was organized across three sites on two planets according to two Martian time zones In *Making Time on Mars* Zara Mirmalek shows that this involved more than a resetting of wristwatches the team's struggle to synchronize with Mars time involved technological and communication breakdowns informal workarounds and extra work to support the technology that was intended to support people Her account of how NASA created an entirely new temporality for the MER mission offers insights about the assumptions behind the organizational relationship between clock time and work Mirmalek herself a member of the mission team offers an insider's view of the MER workplace and community She describes the discord among MER's multiple temporalities and examines issues of professional identity that helped shape the experience of working according to Mars time Considering time and work relationships through a multidisciplinary lens Mirmalek shows how contemporary and historical human technology relationships inform assumptions about the unalterability of clock time She argues that the organizational connection between clock time and work although still operational is outdated

Ancient DNA Elizabeth D. Jones, 2022-01-01 The untold story of the rise of the new scientific field of ancient DNA research and how Jurassic Park and popular media influenced its development Fun and thought provoking Jones builds a wry often wise study of science as a very human endeavor She makes a powerful case that ancient DNA research feeds off media attention as much as the media feeds off it Victoria L Herridge *Nature* Ancient DNA research the recovery of genetic material from long dead organisms is a discipline that developed from science fiction into a reality between the 1980s and today Drawing on scientific historical and archival material as well as original interviews with more than fifty researchers worldwide Elizabeth Jones explores the field's formation and explains its relationship with the media by examining its close connection to de extinction the science and technology of resurrecting extinct species She reveals how the search for DNA from fossils flourished under the influence of intense press and public interest particularly as this new line of research coincided with the book and movie Jurassic Park *Ancient DNA* is the first account to trace the historical and sociological interplay between science and celebrity in the rise of this new research field In the process Jones argues that ancient DNA research is more than a public facing science it is a celebrity science

Intercultural Communication and Science and Technology Studies Luis Reyes-Galindo, Tiago Ribeiro Duarte, 2017-08-18 This timely and engaging book addresses communicative issues that arise when science and technology travel across socio cultural boundaries The authors discuss interactions between different scientific communities scientists and policy makers science and the public scientists and artists and other situations where science clashes with other socio cultural domains The volume includes theoretical proposals of how to deal with intercultural communication related to science and technology as well as rich case studies that illustrate the challenges and strategies deployed in these situations

Individual studies explore Europe Latin America and Africa thus including diverse Global North and South contexts

Minority Report William T. Lynch, 2020-10-16 In Philip K Dick's *The Minority Report* precogs who are imaginary individuals capable of seeing the future are relied upon to stop crime with a consensus report synthesized from two of three precogs When the protagonist is indicted for a future murder he suspects a conspiracy and seeks out the minority report detailing the suppressed testimony of the third precog Science works a lot like this science fiction story Contrary to the view that scientists in a field all share the same paradigm as Thomas Kuhn famously argued scientists support different and competing research programs Statements of scientific consensus need to be actively synthesized from the work of different scientists Not all scientific work will be equally credited by science as a whole While this system works well enough for most purposes it is possible for minority views to fail to get the hearing that they deserve This book analyzes the support that should be given to minority views reconsidering classic debates in science and technology studies and examining numerous case studies

Expertise, Communication, and Organizing Jeffrey W. Treem, Paul M. Leonardi, 2016 Expertise is an intriguing construct Though it is highly desired it is commonly characterized by exclusivity or being something esoteric making it both seemingly difficult to acquire and understand This opaqueness surrounding the nature of expertise in organizational contexts is coupled with greater demands for specialized work and employees increased reliance on communication technologies to complete tasks trends that further complicate the evaluation of workers knowledge and abilities This volume draws upon original works from scholars of diverse backgrounds to explore how recent changes in the structure of organizational life have altered the nature of expertise Specifically this book aims to challenge the perspective that organizational expertise exists to be recognized and utilized and offers an alternative lens that views expertise as emergent and constituted in communication among organizing actors Examining the intersection of communication and expertise within and across different contexts of organizing offers new insights into the discursive material and structural influences that contribute to an understanding of expertise This book offers a comprehensive view of organizational expertise by presenting theoretical frameworks for the study of expertise providing reviews of how the study of expertise has evolved applying perspectives on expertise to different domains of organizational practice and presenting new directions for the study of the intersection of expertise communication and organizing The result is a treatment that considers expertise in diverse forms and across a variety of contexts of organizing and in doing so provides valuable content to researchers from multiple disciplinary backgrounds

An Invitation to Cultural Psychology Jaan Valsiner, 2014-07-21 *An Invitation to Cultural Psychology* looks at the everyday life worlds of human beings through the lens of a new synthetic perspective in cultural psychology that of semiotic dynamics Based on historical work from many different fields in the social and behavioural sciences and the humanities too this perspective applied to cultural psychology suggests that human beings are constantly creating maintaining and abandoning hierarchies of meanings within all cultural contexts they experience It's a

perspective that leans heavily on the work of the great French philosopher Henri Bergson only now being realised as a core basis for human cultural living Jaan Valsiner is the founding editor of the major journal in the field Culture Psychology and Editor of the Oxford Handbook of Culture and Psychology He is the first Niels Bohr Professor of Cultural Psychology at Aalborg University in Denmark where he leads Europe's first Research Centre on Cultural Psychology Scientific Imperialism Uskali Mäki, Adrian Walsh, Manuela Fernández Pinto, 2017-10-16 The growing body of research on interdisciplinarity has encouraged a more in depth analysis of the relations that hold among academic disciplines In particular the incursion of one scientific discipline into another discipline's traditional domain also known as scientific imperialism has been a matter of increasing debate Following this trend Scientific Imperialism aims to bring together philosophers of science and historians of science interested in the topic of scientific imperialism and in particular interested in the conceptual clarification empirical identification and normative assessment of the idea of scientific imperialism Thus this innovative volume has two main goals Indeed the authors first seek to understand interdisciplinary relations emerging from the incursion of one scientific discipline into one or more other disciplines such as in cases in which the conventions and procedures of one discipline or field are imposed on other fields or more weakly when a scientific discipline seeks to explain phenomena that are traditionally considered proper of another discipline's domain Secondly the authors explore ways of distinguishing imperialistic from non imperialistic interactions between disciplines and research fields The first sustained study of scientific imperialism this volume will appeal to postgraduate students and postdoctoral researchers interested in fields such as Science and Technology Studies Sociology of Science Technology Philosophy of Science and History of Science

Why Democracies Need Science Harry Collins, Robert Evans, 2017-03-27 We live in times of increasing public distrust of the main institutions of modern society Experts including scientists are suspected of working to hidden agendas or serving vested interests The solution is usually seen as more public scrutiny and more control by democratic institutions experts must be subservient to social and political life In this book Harry Collins and Robert Evans take a radically different view They argue that rather than democracies needing to be protected from science democratic societies need to learn how to value science in this new age of uncertainty By emphasizing that science is a moral enterprise guided by values that should matter to all they show how science can support democracy without destroying it and propose a new institution The Owls that can mediate between science and society and improve technological decision making for the benefit of all **Global**

Epistemologies and Philosophies of Science David Ludwig, Inkeri Koskinen, Zinhle Mncube, Luana Poliseli, Luis Reyes-Galindo, 2021-07-29 In bringing together a global community of philosophers Global Epistemologies and Philosophies of Science develops novel perspectives on epistemology and philosophy of science by demonstrating how frameworks from academic philosophy e.g. standpoint theory social epistemology feminist philosophy of science and related fields e.g. decolonial studies transdisciplinarity global history of science can contribute to critical engagement with global dimensions

of knowledge and science Global challenges such as climate change food production and infectious diseases raise complex questions about scientific knowledge production and its interactions with local knowledge systems and social realities As academic philosophy provides relatively little reflection on global negotiations of knowledge many pressing scientific and societal issues remain disconnected from core debates in epistemology and philosophy of science This book is an invitation to broaden agendas of academic philosophy by presenting epistemology and philosophy of science as globally engaged fields that address heterogeneous forms of knowledge production and their interactions with local livelihoods practices and worldviews This integrative ambition makes the book equally relevant for philosophers and interdisciplinary scholars who are concerned with methodological and political challenges at the intersection of science and society

Methods in the Philosophy of Science Sophie J Veigl, Adrian Currie, 2025-07-15 A guidebook to methods and methodology encouraging deeper engagement across the philosophy of science and beyond The last twenty years have seen multiple methodological revolutions in the philosophy of science There has been increased diversity concerning the questions asked who asks those questions who the relevant audiences are and what the techniques and tools involved are In Methods in the Philosophy of Science A User's Guide Sophie Veigl and Adrian Currie introduce this range of methods through both practical advice and philosophical reflection Each chapter introduces the reader to a method or set of methods in the philosophy of science discusses its advantages and limitations and provides practical guidance on how to learn skills relevant to applying the method The volume fulfills several critical roles First by introducing and discussing methods in the philosophy of science the collection increases philosophers awareness of methodological options of particular importance for younger scholars who are often not exposed to the diversity of practice Second the collection's practical focus will aid established philosophers in diversifying their own methodological toolkits Third collecting this diversity serves as a ground for philosophical reflection on what we as philosophers take ourselves to be capable of Fourth the collection hopes to increase interdisciplinary links between philosophy and other fields by laying clear the methodological continuity and complement between them

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