

## Changing Order Replication And Induction In Scientific Practice

This fascinating study in the sociology of science explores the way scientists conduct, and draw conclusions from, their experiments. The book is organized around three case studies: replication of the TEA-laser, detecting gravitational rotation, and some experiments in the paranormal. "In his superb book, Collins shows why the quest for certainty is disappointed. He shows that standards of replication are, of course, social, and that there is consequently no outside standard, no Archimedean point beyond society from which we can lever the intellects of our fellows."—Donald M. McCloskey, *Journal of Economic Psychology* "Collins is one of the genuine innovators of the sociology of scientific knowledge. . . . Changing Order is a rich and entertaining book."—Isis "The book gives a vivid sense of the contingent nature of research and is generally a good read."—Augustine Brannigan, *Nature* "This provocative book is a review of [Collins's] work, and an attempt to explain how scientists fit experimental results into pictures of the world. . . . A promising start for new explorations of our image of science, too often presented as infallibly authoritative."—Jon Turney, *New Scientist*

This book represents emerging alternative perspectives to the “constructivist” orthodoxy that currently dominates the field of science and technology studies. Various contributions from distinguished Americans and Europeans in the field, provide arguments and evidence that it is not enough simply to say that science is “socially situated.” *Controversial Science* focuses on important political, ethical, and broadly normative considerations that have yet to be given their due, but which point to a more realistic and critical perspective on science policy.

Change in scientific practice and its implications for the status of scientific claims, examined through an analysis of three episodes at a synchrotron laboratory. After World War II, particle physics became a dominant research discipline in American academia. At many universities, alumni of the Manhattan Project and of Los Alamos were granted resources to start (or strengthen) programs of high-energy physics built around the promise of a new and more powerful particle accelerator, the synchrotron. The synchrotron was also a source of very intense X-rays, useful for research in solid states physics and in biology. As synchrotron X-ray science grew, the experimental practice of protein crystallography (used to determine the atomic structures of proteins and viruses), garnered funding, prestige, and acclaim. In *Velvet Revolution at the Synchrotron*, Park Doing examines the change in scientific practice at a synchrotron laboratory as biology rose to dominance over physics. He draws on his own observations and experiences at the Cornell University synchrotron, and considers the implications of that change for the status of scientific claims. *Velvet Revolution at the Synchrotron* is one of the few recent works in the sociology of science that engages specific scientific and technical claims through participant observation—recorded evocatively and engagingly—to address issues in the philosophy of science. Doing argues that bureaucratic change in science is neither “top-down” nor “bottom-up” but rather performed in and realized through recursively related forums of technical assertion and resistance. He considers the relationship of this change to the content of science, and the implications of this relationship for the project of laboratory studies begun in the late 1970s.

An ambitious new model of experimentation that will reorient our understanding of the key features of experimental practice. What is experimental knowledge, and how do we get it? While there is general agreement that experiment is a crucial source of scientific knowledge, how experiment generates that knowledge is far more contentious. In this book, philosopher of science James Mattingly explains how experiments function. Specifically, he discusses what it is about experimental practice that transforms observations of what may be very localized, particular, isolated systems into what may be global, general, integrated empirical knowledge. Mattingly argues that the purpose of experimentation is the same as the purpose of any other knowledge-generating enterprise—to change the state of information of the knower. This trivial-seeming point has a non-trivial consequence: to understand a knowledge-generating enterprise, we should follow the flow of information. Therefore, the account of experimental knowledge Mattingly provides is based on understanding how information flows in experiments: what facilitates that flow, what hinders it, and what characteristics allow it to flow from system to system, into the heads of researchers, and finally into our store of scientific knowledge.

"Artificial Intelligence" (AI) a term coined in the 1950s actually dates back as far as 1943. Now very much in the public consciousness, AI research has fallen in and out of favour over the years. Routledge Library Editions: Artificial Intelligence (10 Volumes) brings together as one set, or individual volumes, a small interdisciplinary series of previously out-of-print titles, originally published between 1970 and 1994. Covering ground in computer science, literature, philosophy, psychology, psychotherapy and sociology, this set is a fascinating insight into the development of ideas surrounding AI.

During the second quarter of the nineteenth century, Londoners were enthralled by a strange fluid called electricity. In examining this period, Iwan Morus moves beyond the conventional focus on the celebrated Michael Faraday to discuss other electrical experimenters, who aspired to spectacular public displays of their discoveries. Revealing connections among such diverse fields as scientific lecturing, laboratory research, telegraphic communication, industrial electroplating, patent conventions, and innovative medical therapies, Morus also shows how electrical culture was integrated into a new machine-dominated, consumer society. He sees the history of science as part of the history of production, and emphasizes the labor and material resources needed to make electricity work. *Frankenstein's Children* explains that Faraday, with his colleagues at the Royal Society and the Royal Institution, looked at science as the province of a highly trained elite, who presented their abstract picture of nature only to select groups. The book contrasts Faraday's views with those of other practitioners, to whom science was a practical, skill-based activity open to all. In venues such as the Galleries of Practical Science, electrical phenomena were presented to a public less distinguished but no less enthusiastic and curious than Faraday's audiences. William Sturgeon, for instance, emphasized building apparatus and exhibiting electrical phenomena, while chemists, instrument-makers, and popular lecturers supported the London Electrical Society. These previously little studied "electricians" contributed much to the birth of "Frankenstein's children"--the not completely benign effects of electricity on a new consumer world. Originally published in 1998. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton

University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

According to the received tradition, the language used to refer to natural kinds in scientific discourse remains stable even as theories about these kinds are refined. In this illuminating book, Joseph LaPorte argues that scientists do not discover that sentences about natural kinds, like 'Whales are mammals, not fish', are true rather than false. Instead, scientists find that these sentences were vague in the language of earlier speakers and they refine the meanings of the relevant natural-kind terms to make the sentences true. Hence, scientists change the meaning of these terms, This conclusions prompts LaPorte to examine the consequences of this change in meaning for the issue of incommensurability and for the progress of science. This book will appeal to students and professional in the philosophy of science, the philosophy of biology and the philosophy of language.

One of the longest standing traditions in sociology, interactionism is concerned with studying human interaction and showing how society to a large part is constituted by patterns of interaction. In spite of the work of figures such as Robert E. Park, Everett C. Hughes, Erving Goffman, Herbert Blumer, Norman K. Denzin and Gary Alan Fine, interactionism – perhaps owing to its association with the perspective of symbolic interactionism – remains something of an odd man out in mainstream sociology. This book seeks to rectify this apparent neglect by bringing together critical social theories and microsociological approaches to research, thus revealing the critical and cultural potentials in interactionism – the chapters arguing that far from being oriented towards the status quo, interactionism in fact contains a critical and cultural edge. Presenting the latest work from some of the leading figures in interactionist thought to show recent developments in the field and offer an overview of some of the most potent and prominent ideas within critical and cultural criminology, Critical and Cultural Interactionism will appeal to scholars of sociology with interests in interactionism, social theory research methods and criminology.

This book provides an innovative theoretical and analytical framework for studying the role and impact of specialized research organizations and consultancies on decision making in climate politics. It includes advanced empirical analysis of the case of Germany, compared with the situation in the USA. The book improves the understanding of the role and impact of 'scientific' advice in coping with the challenge of anthropogenic climate change.

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 (“expect 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.

21st Century Sociology: A Reference Handbook provides a concise forum through which the vast array of knowledge accumulated, particularly during the past three decades, can be organized into a single definitive resource. The two volumes of this Reference Handbook focus on the corpus of knowledge garnered in traditional areas of sociological inquiry, as well as document the general orientation of the newer and currently emerging areas of sociological inquiry. In the light of the confusion surrounding the environmental crisis, Peter Dickens explores how the natural world relates to the social. The book aims to find ways of reorganising knowledge in the light of ecological consciousness.

The essays are tied together by their explorations of connections (primarily among technology, society, and knowledge) and by their general focus on modern "high" technology. They also share an emphasis on the complexity of technological formation and fixation and on the role of belief (especially self-validating belief) in technological change.

Software engineering, is widely recognized as one of today's most exciting, stimulating, and profitable research areas, with a significant practical impact on the software industry and academia. The LASER school, held annually since 2004 on Elba Island, Italy, is intended for professionals from industry (engineers and managers) as well as university researchers, including PhD students. This book contains selected lecture notes from the LASER summer schools 2008-2010, which focused on concurrency and correctness in 2008, software testing in 2009, and empirical software engineering, in 2010.

This book covers a broad spectrum of topics, from experimental philosophy and cognitive theory of science, to social epistemology and research and innovation policy. Following up on the previously published Volume 1, “Mind, Rationality, and Society,” it provides further applications of methodological cognitivism in areas such as scientific discovery, technology transfer and innovation policy. It also analyzes the impact of cognitive science on philosophical problems like causality and truth. The book is divided into four parts: Part I “Experimental Philosophy and Causality” tackles the

problem of causality, which is often seen as straddling metaphysics, ontology and epistemology. Part II “Cognitive Rationality of Science” deals with the cognitive foundation of scientific rationality, starting from a strong critique of the neopositivist rationality of science on the one hand and of the relativist and social reduction of the methodology of science on the other. Part III “Research Policy and Social Epistemology” deals with topics of social epistemology, science policy and culture of innovation. Lastly, Part IV “Knowledge Transfer and Innovation” addresses the dynamics of knowledge generation, transfer and use in technological innovation.

A systematic examination by the best writers in a variety of fields working on issues of how climate change affects society, and how social, economic, and political systems can, do, and should respond.

From 1918 to the late 1940s, a host of influential scientists and intellectuals in Europe and North America were engaged in a number of far-reaching unity of science projects. In this period of deep social and political divisions, scientists collaborated to unify sciences across disciplinary boundaries and to set up the international scientific community as a model for global political cooperation. They strove to align scientific and social objectives through rational planning and to promote unified science as the driving force of human civilization and progress. This volume explores the unity of science movement, providing a synthetic view of its pursuits and placing it in its historical context as a scientific and political force. Through a coherent set of original case studies looking at the significance of various projects and strategies of unification, the book highlights the great variety of manifestations of this endeavour. These range from unifying nuclear physics to the evolutionary synthesis, and from the democratization of scientific planning to the utopianism of H.G. Wells's world state. At the same time, the collection brings out the substantive links between these different pursuits, especially in the form of interconnected networks of unification and the alignment of objectives among them. Notably, it shows that opposition to fascism, using the instrument of unified science, became the most urgent common goal in the 1930s and 1940s. In addressing these issues, the book makes visible important historical developments, showing how scientists participated in, and actively helped to create, an interwar ideology of unification, and bringing to light the cultural and political significance of this enterprise.

Changing Order Replication and Induction in Scientific Practice University of Chicago Press

A proposal for a new framework for fostering collaborations across disciplines, addressing both theory and practical applications. Cross-disciplinary collaboration increasingly characterizes today's science and engineering research. The problems and opportunities facing society do not come neatly sorted by discipline. Difficulties arise when researchers from disciplines as different as engineering and the humanities work together and find that they speak largely different languages. This book explores a new framework for fostering collaborations among existing disciplines and expertise communities. The framework unites two ideas to emerge from recent work in STS: trading zones, in which scientific subcultures, each with its own language, develop the equivalents of pidgin and creole; and interactional expertise, in which experts learn to use the language of another research

community in ways that are indistinguishable from expert practitioners of that community. A trading zone can gradually become a new area of expertise, facilitated by interactional expertise and involving negotiations over boundary objects (objects represented in different ways by different participants). The volume describes applications of the framework to service science, business strategy, environmental management, education, and practical ethics. One detailed case study focuses on attempts to create trading zones that would help prevent marine bycatch; another investigates trading zones formed to market the female condom to women in Africa; another describes how humanists embedded in a nanotechnology laboratory gained interactional expertise, resulting in improved research results for both humanists and nanoscientists. Contributors Brad Allenby, Donna T. Chen, Harry Collins, Robert Evans, Erik Fisher, Peter Galison, Michael E. Gorman, Lynn Isabella, Lekelia D. Jenkins, Mary Ann Leeper, Roop L. Mahajan, Matthew M. Mehalik, Ann E. Mills, Bolko von Oetinger, Elizabeth Powell, Mary V. Rorty, Jeff Shrager, Jim Spohrer, Patricia H. Werhane

The third in the readers series *Resources for the Knowledge-Based Economy, Knowledge Management Tools* analyzes the use of knowledge management tools in the past, present and future. It helps managers and companies utilize what they know. The selections in this volume were carefully chosen to represent the strengths and weaknesses, and pros and cons of using technology to support knowledge-based activities. They acknowledge that, although tools alone are not the answer to the difficult questions surrounding knowledge management, if utilized effectively tools can open up new realms of innovation and efficiency for today's knowledge-driven businesses. What are the tools of the Knowledge Era? How can technology help knowledge generation, codification, and transfer? What are key considerations as such tools are implemented?

Providing an overview of key issues in theory and practice, *Replication Research in Education* is designed to identify and discuss the benefits and challenges facing replication studies in education. Both clear and practical, this groundbreaking volume covers how to introduce, develop, conduct, report, and discuss these studies, and the issues they raise for policy and practice. Bridging theory and practice, this book considers what replication research should look like, how it should be conducted, and how to judge when it has been successful. It enables researchers to plan and conduct studies successfully, from their earliest stages through to completion. This key text: brings together in a single volume, existing issues, claims and counterclaims, discourses, and practices of replication; introduces, covers, and extends this field of research, indicating its possibilities and limits; expands and adds to existing discussions and practices; will enable researchers to design, conduct, evaluate, and critique studies. The comprehensive and exhaustive coverage of issues and practices within *Replication Research in Education* make it a 'must read' for all novice and experienced educational researchers who are considering, conducting, and reviewing replication studies in education.

The first edition of this book profoundly challenged and divided students of philosophy, sociology, and the history of science when it was published in 1976. In this second edition, Bloor responds in a substantial new Afterword to the heated debates engendered by his book.

'The 4th edition of this extensive text is an outstanding resource prepared by nurses (and a librarian) for nurses. In a structured

and helpful style it presents thousands of items from the literature - published papers, reports, books and electronic resources - as a clear, accessible, and most of all useful collection. The efforts to signpost and lead the reader to the sought-for information are effective and well-conceived, and the "How to use this book" section is remarkably simple...the book should be found in every nursing and health library, every research institute and centre, and close to many career researchers' desks' - RCN Research This latest edition of Resources for Nursing Research provides a comprehensive bibliography of sources on nursing research, and includes references for books, journal papers and Internet resources. Designed to act as a 'signpost' to available literature in the area, this Fourth Edition covers the disciplines of nursing, health care and the social sciences. Entries are concise, informative and accessible, and are arranged under three main sections: - 'Sources of Literature' covers the process of literature searching, including using libraries and other tools for accessing literature - 'Methods of Inquiry' includes an introduction to research, how to conceptualize and design nursing and health research, measurement and data collection, and the interpretation and presentation of data - 'The Background to Research in Nursing' encompasses the development of nursing research; the profession's responsibilities; the role of government; funding; research roles and careers; and education for research. Fully revised and updated, the Fourth Edition includes just under 3000 entries, of which 90% are new. It has extensive coverage of US, UK literature and other international resources. This new edition will be an essential guide for all those with an interest in nursing research, including students, teachers, librarians, practitioners and researchers.

Examines the history of science in light of recent theories of sexuality and the body.

In recent years, Earth systems science has advanced rapidly, helping to transform climate change and other planetary risks into major political issues. Changing the Atmosphere strengthens our understanding of this important link between expert knowledge and environmental governance. In so doing, it illustrates how the emerging field of science and technology studies can inform our understanding of the human dimensions of global environmental change. Incorporating historical, sociological, and philosophical approaches, Changing the Atmosphere presents detailed empirical studies of climate science and its uptake into public policy. Topics include the scientific, political, and social processes involved in the creation of scientific knowledge about climate change; the historical and contemporary role of expert knowledge in creating and perpetuating policy concern about climate change; and the place of science in institutions of global environmental governance such as the World Meteorological Organization, the Framework Convention on Climate Change, and the Intergovernmental Panel on Climate Change. Together, the essays demonstrate fundamental connections between the science and politics of planet Earth. In the struggle to create sustainable forms of environmental governance, they indicate, a necessary first step is to understand how communities achieve credible, authoritative representations of nature. Contributors Paul N. Edwards, Dale Jamieson, Sheila Jasanoff, Chunglin Kwa, Clark Miller, Stephen D. Norton, Stephen H. Schneider, Simon Shackley, Frederick Suppe

Though the publication of Kuhn's Structure of Scientific Revolutions seemed to herald the advent of a unified study of the history and philosophy of science, it is a hard fact that history of science and philosophy of science have increasingly grown apart. Recently, however, there has been a series of workshops on both sides of the Atlantic (called '&HPS') intended to bring historians and philosophers of science together to discuss new integrative approaches. This is therefore an especially appropriate time to explore the problems with and prospects

for integrating history and philosophy of science. The original essays in this volume, all from specialists in the history of science or philosophy of science, offer such an exploration from a wide variety of perspectives. The volume combines general reflections on the current state of history and philosophy of science with studies of the relation between the two disciplines in specific historical and scientific cases.

This book focuses on some of the major developments in the history of contemporary (19th and 20th century) mathematics as seen in the broader context of the development of science and culture. Avoiding technicalities, it displays the breadth of contrasting images of mathematics favoured by different countries, schools and historical movements, showing how the conception and practice of mathematics changed over time depending on the cultural and national context. Thus it provides an original perspective for embracing the richness and variety inherent in the development of mathematics. Attention is paid to the interaction of mathematics with themes whose proper treatment have been neglected by the traditional historiography of the discipline, such as the relationship between mathematics, statistics and medicine. It is widely recognised that mainstream economics has failed to translate micro consistently into macro economics and to provide endogenous explanations for the continual changes in the economic system. Since the early 1980s, a growing number of economists have been trying to provide answers to these two key questions by applying an evolutionary approach. This new departure has yielded a rich literature with enormous variety, but the unifying principles connecting the various ideas and views presented are, as yet, not apparent. This 2005 volume brings together fifteen original articles from scholars - each of whom has made a significant contribution to the field - in their common effort to reconstruct economics as an evolutionary science. Using meso economics as an analytical entity to bridge micro and macro economics as well as static and dynamic realms, a unified economic theory emerges.

Science and the Quest for Reality is an interdisciplinary anthology that situates contemporary science within its complex philosophical, historical, and sociological contexts. The anthology is divided between, firstly, characterizing science as an intellectual activity and, secondly, defining its social role. The philosophical and historical vicissitudes of science's truth claims has raised profound questions concerning the role of science in society beyond its technological innovations. The deeper philosophical issues thus complement the critical inquiry concerning the broader social and ethical influence of contemporary science. In the tradition of the 'Main Trends of the Modern World' series, this volume includes both classical and contemporary works on the subject.

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.

Holography exploded on the scientific world in 1964, but its slow fuse had been burning much longer. Over the next four decades, the echoes of that explosion reached scientists, engineers, artists and popular culture. Emerging from classified military research, holography evolved to represent the power of post-war physics, an aesthetic union of art and science, the countercultural meanderings of holism, a cottage industry for waves of would-be entrepreneurs and a fertile plot device for science fiction. New working cultures sprang up to mutate holography, redefining its products, reshaping its audiences and reconceiving its applications. The outcomes included ever more sublime holograms and



exquisitely sensitive measuring techniques - but also priority disputes, prurience and poisonous business rivalries. New subjects cross intellectual borders, and so do their explanations. This book draws on the history and philosophy of science and technology, social studies, politics and cultural history to trace the trajectory of holography. The result is an in-depth account of how new science emerges. Based on unprecedented interviews with pioneer holographers and extensive archival research, it reveals how science, technology, art and wider culture are entwined in the modern world.

In recent political debates there has been a significant change in the valence of the word “experts” from a superlative to a near pejorative, typically accompanied by a recitation of experts’ many failures and misdeeds. In topics as varied as Brexit, climate change and vaccinations there is a palpable mistrust of experts and a tendency to dismiss their advice. Are we witnessing, therefore, the “death of expertise,” or is the handwringing about an “assault on science” merely the hysterical reaction of threatened elites? In this new book, Gil Eyal argues that what needs to be explained is not a one-sided “mistrust of experts” but the two-headed pushmi-pullyu of unprecedented reliance on science and expertise, on the one hand, coupled with increased suspicion, skepticism and dismissal of scientific findings, expert opinion or even whole branches of investigation, on the other. The current mistrust of experts, Eyal argues, is best understood as one more spiral in an on-going, recursive crisis of legitimacy. The “scientization of politics,” of which critics warned in the 1960s, has brought about a politicization of science, specifically of regulatory and policy science, and the two processes reinforce one another in an unstable, crisis-prone mixture. Eyal demonstrates that the strategies designed to respond to the crisis - from an increased emphasis on inclusion of laypeople and stakeholders in scientific research and regulatory decision-making to approaches seeking to generate trust by relying on objective procedures such as randomized controlled trials (RCTs) – end up exacerbating the crisis, while undermining and contradicting one another. This timely book will be of great interest to students and scholars in the social sciences and to anyone concerned about the political uses of, and attacks on, scientific knowledge and expertise.

Brother Bear learns about fear and getting back in the saddle when a ghost haunts the riding academy.

A fascinating account, written in real time, of the unfolding of a scientific discovery: the first detection of gravitational waves. Scientists have been trying to confirm the existence of gravitational waves for fifty years. Then, in September 2015, came a “very interesting event” (as the cautious subject line in a physicist’s email read) that proved to be the first detection of gravitational waves. In *Gravity’s Kiss*, Harry Collins—who has been watching the science of gravitational wave detection for forty-three of those fifty years and has written three previous books about it—offers a final, fascinating account, written in real time, of the unfolding of one of the most remarkable scientific discoveries ever made. Predicted by Einstein in his theory of general relativity, gravitational waves carry energy from the collision or explosion of stars. Dying binary stars, for example, rotate faster and faster around each other until they merge, emitting a burst of gravitational waves. It is only with the development of extraordinarily sensitive, highly sophisticated detectors that physicists can now confirm Einstein’s prediction. This is the story that Collins tells. Collins, a sociologist of science who has been embedded in the gravitational wave community since 1972, traces the detection, the analysis, the confirmation, and the public presentation and the reception of the discovery—from the first email to the final published paper and the response of professionals and the public. Collins shows that science today is collaborative, far-flung (with the physical location of the participants hardly mattering), and sometimes secretive, but still one of the few institutions that has integrity built into it.

In this important book, a leading authority in the field of social theory and communication shows how science is a rhetorical and narrative

activity--a story well told. Richard Harvey Brown argues that expert knowledge is a form of power and explains how a narrative view of science can integrate science within a democratic civic discourse, as in the movement for environmental justice in the United States. This finite study examines how exactitude has come to occupy such a prominent place in Western culture. Beginning with the late 18th century and continuing into the 20th, the essays here support the view that centralizing states and large-scale commercial enterprises have long been the major promoters of numerical precision. Photos & illus.

Perspectives on Conceptual Change presents case study excerpts illustrating the influence on and processes of students' conceptual change, and analyses of these cases from multiple theoretical frameworks. Researchers in reading education have been investigating conceptual change and the effects of students' prior knowledge on their learning for more than a decade. During this time, this research had been changing from the general and cognitive--average effects of interventions on groups of students--to the specific and personal--individuals' reactions to and conceptual change with text structures. Studies in this area have begun to focus on the social, contextual, and affective influences on conceptual change. These studies have potential to be informed by other discourses. Hence, this book shows the results of sharing data--in the form of case study excerpts--with researchers representing varying perspectives of analyses. Instances of learning are examined from cross disciplinary views. Case study authors in turn respond to the case analyses. The result is a text that provides multiple insights into understanding the learning process and the conditions that impact learning.

This book is a compendium of pragmatism in the social sciences. While addressing several distinct spheres, it carries a common message: the future of the social sciences depends on a shared understanding of society based on the knowledge of various disciplines and transcending the currently forbidding borders between scientific knowledge and the other forms of knowledge. Looking back at the social science traditions this is nothing new. To ensure a fruitful future for the social sciences a paradigm shift is unavoidable. The consequence of the increase of knowledge in the last two centuries was the specialization of the sciences. The nineteenth century saw the separation of humanities and social sciences; the twentieth century is even characterized by specialization within the disciplines and the occurrence of competing schools of thought. This book tries to overcome the barriers that are built between and within the disciplines, and to counteract the unnecessary barriers created by the emergence of "schools of thoughts" that distrust each other and the social sciences as a whole. This book was originally published as a special issue of Innovation: The European Journal of Social Science Research.

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