Ad Infinitum The Ghost In Turings Machine Taking God Out Of Mathematics And Putting The Body Back In An Essay In Corporeal Semiotics

A 2006 investigation of the idea of the powerful Asian empires in the works of Milton, Dryden, Defoe and Swift.

At a time of rapid demographic change and amidst the many educational challenges facing the US, this critical new collection presents mathematics education from a culturally responsive perspective. It tackles the most crucial issues of teaching mathematics to an ethnically diverse school population, including the political dimension of mathematics education within the context of governmental efforts to improve achievement in school mathematics. Culturally Responsive Mathematics Education moves beyond a point of view that is internal to mathematics education as a discipline, and instead offers a broad perspective of mathematics as a significant, liberating intellectual force in our society. The editors of this volume bring together contributions from many of the leading teachers, teacher educators, researchers, scholars, and activists who have been working to reorient mathematics education in ways that reflect mathematics education as accomplished, first and foremost, through human interactions.

Taking its inspiration from Michel Foucault, this volume of essays integrates the analysis of security into the study of modern political and cultural theory. Explaining how both politics and security are differently problematised by changing accounts of time, the work shows how, during the course of the 17th century, the problematisation of government and rule became newly enframed by a novel account of time and human finitude, which it calls 'factical finitude'. The correlate of factical finitude is the infinite, and the book explains how the problematisation of politics and security became that of securing the infinite government of finite things. It then explains how concrete political form was given to factical finitude by a combination of geopolitics and biopolitics. Modern sovereignty required the services of biopolitics from the very beginning. The essays explain how these politics of security arose at the same time, changed together, and have remained closely allied ever since. In particular, the book explains how biopolitics of security changed in response to the molecularisation and digitalisation of Life, and demonstrates how this has given rise to the dangers and contradictions of 21st century security politics. This book will be of much interest to students of political and cultural theory, critical security studies and International Relations.

Becoming Beside Ourselves continues the investigation that the renowned cultural theorist and mathematician Brian Rotman began in his previous books Signifying Nothing and Ad Infinitum...The Ghost in Turing's Machine: exploring certain signs and the conceptual innovations and subjectivities that they facilitate or foreclose. In

Becoming Beside Ourselves, Rotman turns his attention to alphabetic writing or the inscription of spoken language. Contending that all media configure what they mediate, he maintains that alphabetic writing has long served as the West's dominant cognitive technology. Its logic and limitations have shaped thought and affect from its inception until the present. Now its grip on Western consciousness is giving way to virtual technologies and networked media, which are reconfiguring human subjectivity just as alphabetic texts have done for millennia. Alphabetic texts do not convey the bodily gestures of human speech: the hesitations, silences, and changes of pitch that infuse spoken language with affect. Rotman suggests that by removing the body from communication, alphabetic texts enable belief in singular, disembodied, authoritative forms of being such as God and the psyche. He argues that while disembodied agencies are credible and real to "lettered selves," they are increasingly incompatible with selves and subjectivities formed in relation to new virtual technologies and networked media. Digital motion-capture technologies are restoring gesture and even touch to a prominent role in communication. Parallel computing is challenging the linear thought patterns and ideas of singularity facilitated by alphabetic language. Barriers between self and other are breaking down as the networked self is traversed by other selves to become multiple and distributed, formed through many actions and perceptions at once. The digital self is going plural, becoming beside itself.

Silicon Second Nature takes us on an expedition into an extraordinary world where

nature is made of bits and bytes and life is born from sequences of zeroes and ones. Artificial Life is the brainchild of scientists who view self-replicating computer programs—such as computer viruses—as new forms of life. Anthropologist Stefan Helmreich's look at the social and simulated worlds of Artificial Life—primarily at the Santa Fe Institute, a well-known center for studies in the sciences of complexity—introduces readers to the people and programs connected with this unusual hybrid of computer science and biology. When biology becomes an information science, when DNA is downloaded into virtual reality, new ways of imagining "life" become possible. Through detailed dissections of the artifacts of Artifical Life, Helmreich explores how these novel visions of life are recombining with the most traditional tales told by Western culture. Because Artificial Life scientists tend to see themselves as masculine gods of their cyberspace creations, as digital Darwins exploring frontiers filled with primitive creatures, their programs reflect prevalent representations of gender, kinship, and race, and repeat origin stories most familiar from mythical and religious narratives. But Artificial Life does not, Helmreich says, simply reproduce old stories in new software. Much like contemporary activities of cloning, cryonics, and transgenics, the practice of simulating and synthesizing life in silico challenges and multiplies the very definition of vitality. Are these models, as some would claim, actually another form of the real thing? Silicon Second Nature takes Artifical Life as a symptom and source of our mutating visions of life itself.

An innovative contribution to educational research is to be found in this book. The book addresses the need to generate texts that assist educators and future educators in taking up new research and making sense of it. It offers unique approaches to interpreting research within the mathematics education field and takes its place in a growing set of resources. The book will appeal to teacher educators, student teachers, and mathematics education researchers alike.

Based on first-hand experience, this entrancing narrative of daily life in Peking in the first decades of this century makes vivid the milieu of a fictional family--the traditionally-minded, lower middle- class family of Wu. The author uses experiences of the Wu family's son from birth to marriage to convey in rich detail a vanished way of life, including children's games, nursery rhymes, and education; flowers and foods; street entertainers, folk amusements, and acrobatics; religions; jokes and poems; and a great deal more. Originally published in 1983. 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.

Using Phillipe Lacoue-Labarthe and Jean-Luc Nancy's groundbreaking study of the

persistence of German Idealist philosophy as his starting point, Justin Clemens presents a valuable study of the links between Romanticism and contemporary theory. The central contention of this book is that contemporary theory is still essentially Romantic - despite all its declarations to the contrary, and despite all its attempts to elude or exceed the limits bequeathed it by Romantic thought. The argument focuses on the ruses of 'Romanticism's indefinable character' under two main rubrics, 'Contexts' and 'Interventions'. The first three chapters investigate 'Contexts', examining some of the broad trends in the historical and institutional development of Romantic criticism; the second section, 'Interventions', comprises close readings of the work of Jacques Lacan, Gilles Deleuze and Félix Guattari, Eve Kosofsky Sedgwick, Ian Hunter and Alain Badiou. In the first chapter Clemens identifies and traces the development of two interlocking recurrent themes in Romantic criticism: the Romantic desire to escape Romanticism, and the problem posed to aesthetico-philosophical thought by the modern domiciliation of philosophy in the university. He develops these themes in the second chapter by examining the link forged between aesthetics and the subject in the work of Immanuel Kant. In the third chapter, Clemens shows how the Romantic problems of the academic institution and aesthetics were effectively bound together by the philosophical diagnosis of nihilism. Chapter Four focuses on two key moments in the work of Jacques Lacan - his theory of the 'mirror stage' and his 'formulas of sexuation' - and demonstrates how Lacan returns to the grounding claims of Kantian

aesthetics in such a way as to render him complicit with the Romantic thought he often seems to contest. In the following chapter, taking Deleuze and Guattari's notion of 'multiplicity' as a guiding thread, Clemens links their account to their professed 'anti-Platonism', showing how they find themselves forced back onto emblematically Romantic arguments. Chapter Six provides a close reading of Sedgwick's most influential text, Epistemology of the Closet. Clemens' reading localizes her practice both in the newly consolidated academic field of 'Queer Theory' and in a conceptual genealogy whose roots can be traced back to a particular anti-Enlightenment strain of Romanticism. Clemens next turns to the professedly anti-Romantic arguments of Ian Hunter, a major figure in the ongoing re-writing of modern histories of education. In the final chapter he examines the work of the contemporary French philosopher Alain Badiou. Clemens argues that, if Badiou's hostility to the diagnosis of nihilism, his return to Plato and mathematics, and his expulsion of poetry from philosophical method, all place him at a genuine distance from dominant Romantic trends, even this attempt admits ciphered Romantic elements. This study will be of interest to literary theorists, philosophers, political theorists, and cultural studies scholars.

Taking as his point of departure Norbert Weiner's statement that information is basic to understanding materialism in our era, Ronald Schleifer shows how discoveries of modern physics have altered conceptions of matter and energy and the ways in which both information theory and the study of literature can enrich these conceptions.

Expanding the reductive notion of "the material" as simply matter and energy, he formulates a new, more inclusive idea of materialism.

French sociologist Bruno Latour has previously written about the relationship between people, science and technology. In this book he sets out his own ideas about 'actor network theory' and its relevance to management and organisation theory.

What do biologists study when they study "life" today? Drawing on tools from rhetoric and poststructuralist theory, the author argues that the ascent of molecular biology, with its emphasis on molecules such as DNA rather than organisms, was enabled by crucial rhetorical "softwares." Metaphors such as the genetic "code" made possible a transformation of the very concept of life, a transformation that often casts organisms as information systems. With careful readings of key texts from the history of molecular biology—such as those of Erwin Schrödinger, George Gamow, Jacques Monod, and François Jacob—the author maps out the complex relations between the practices of rhetoric and the technoscientific triumphs they accompanied, triumphs that bolstered a "postvital" biology that increasingly elides and questions the boundary between organisms and machines. There have been many popular books, and a few academic ones, on the Human Genome Initiatives. On Beyond Living is a genealogy of these

initiatives, a map of how we have come to equate human beings with "information." Melding contemporary theory with scientific discourse, it is certain to provoke discussion (and controversy) in the fields of cultural studies, theory, and science with its penetrating inquiries into the relations between rhetoric and technoscience.

The issue of how the external world becomes part of the behavioral repertoire of children has been important to psychology from its very beginning, preoccupying theorists from Sigmund Freud to George Herbert Mead. But ever since Lev Vygotsky claimed that every function in a child's activity appears first as a process in the social realm between individuals and moves to a process that individual children can accomplish relatively independently, there has been increased debate as to exactly how this process of internalization happens. In contemporary developmental psychology, the process of internalization has become so important that the time is ripe for a book which explicitly addresses the problems it poses. Although the chapters in this book deal with age groups from preschool to adolescence, and topics from mathematics to storytelling and from taking risks to making moral judgments, there is one core question which unifies them all: If the growing competence of a child is truly sociogenetic, if it truly grows out from, is supported by, and is dependent upon the social, where is

that competence truly located? Bearing a variety of labels--cultural-historical, co-constructionist, dialectical, contextualist, narrative, hermeneutic, and discursive psychologies--and analytic constructs--scaffolding, proleptic instruction, participation, appropriation, and situated activity--contemporary perspectives are showing clear signs of development and differentiation. This volume's goal is to help bring some order to these differences, without denying either the usefulness of this variety or the importance of the differences among perspectives. This new book illuminates these differences by collecting a select sample of theory and research into one of two major sections. The first section includes work undertaken from a social interactive perspective. The overarching aim is to identify processes of child-child or child-adult interactions as they emerge over relatively short periods of time. Typically, the methodology involves the microanalysis of videotaped interactions. Development is situated literally within social interactions which are considered directly responsible for children's development. The second section provides a sample of work representing a symbolic action perspective. This one is not oriented toward social interactions but toward the symbolic meanings that they express and that children impose on them. The dominant methodology is interpretive or hermeneutic, and the goal is to articulate the figurative (metaphoric) processes and narrative structures that

inhabit social actions and from which they draw their meaning and coherence. DIVTheoretical study of the relationship between technoscience and the human body that examines the ways in which bodies and machines "speak" not just through language but also through gesture, numbers, and other non-alphabetic systems of expressio/div

A pioneering call for a new understanding of scale across the humanities How is it possible that you are—simultaneously—cells, atoms, a body, quarks, a component in an ecological network, a moment in the thermodynamic dispersal of the sun, and an element in the gravitational whirl of galaxies? In this way, we routinely transform reality into things already outside of direct human experience, things we hardly comprehend even as we speak of DNA, climate effects, toxic molecules, and viruses. How do we find ourselves with these disorienting layers of scale? Enter Scale Theory, which provides a foundational theory of scale that explains how scale works, the parameters of scalar thinking, and how scale refigures reality—that teaches us how to think in terms of scale, no matter where our interests may lie. Joshua DiCaglio takes us on a fascinating journey through six thought experiments that provide clarifying yet provocative definitions for scale and new ways of thinking about classic concepts ranging from unity to identity. Because our worldviews and philosophies are largely built on nonscalar

experience, he then takes us slowly through the ways scale challenges and reconfigures objects, subjects, and relations. Scale Theory is, in a sense, nondisciplinary—weaving together a dizzying array of sciences (from nanoscience to ecology) with discussions from the humanities (from philosophy to rhetoric). In the process, a curious pattern emerges: attempts to face the significance of scale inevitably enter terrain closer to mysticism than science. Rather than dismiss this connection, DiCaglio examines the reasons for it, redefining mysticism in terms of scale and integrating contemplative philosophies into the discussion. The result is a powerful account of the implications and challenges of scale, attuned to the way scale transforms both reality and ourselves.

An examination of the ways human movement can be represented as a formal language and how this language can be mediated technologically. In Motion and Representation, Nicolás Salazar Sutil considers the representation of human motion through languages of movement and technological mediation. He argues that technology transforms the representation of movement and that representation in turn transforms the way we move and what we understand to be movement. Humans communicate through movement, physically and mentally. To record and capture integrated movement (both bodily and mental), by means of formal language and technological media, produces a material

record and cultural expression of our evolving kinetic minds and identities. Salazar Sutil considers three forms of movement inscription: a written record (notation), a visual record (animation), and a computational record (motion capture). He focuses on what he calls kinetic formalism—formalized movement in such pursuits as dance, sports, live animation, and kinetic art, as well as abstract definitions of movement in mathematics and computer science. He explores the representation of kinetic space and spatiotemporality; the representation of mental plans of movement; movement notation, including stave notation (Labanotation) and such contemporary forms of notation as Choreographic Language Agent; and the impact of digital technology on contemporary representations of movement—in particular motion capture technology and Internet transfer protocols. Motion and Representation offers a unique cultural theory of movement and of the ever-changing ways of representing movement.

How do we really think about the world? We may use words to tell stories about it or draw pictures to represent it, but one thing we do far more than either of those is make calculations of the things that are in it—and to do that we use numbers. Numbers give shape and texture to almost everything we feel, say, dream, and do, a fact that Steven Connor explores in this qualitative assessment of the quantifiable. Looking at how numbers play a part in nearly every aspect of our

lives, he offers a fascinating portrait of the world as a world of numbers. Connor explores a host of thought-provoking aspects of our numerical existence. He looks at the unexpected oddities that shape the loneliest number—the number one. He looks at counting as a human phenomenon and the ways we negotiate crowds, swarms, and multitudes. He demonstrates the work of calculation as it lies at the heart of poetry, jokes, painting, and music. He shows how we use numbers to adjust to uncertainty and chance and how they help us visualize the world in diagrammatic ways, and he unveils how numbers even help us think about death. Altogether, Connor brings into relief an aspect of our lives so ubiquitous that we often can't see it, unveiling a rich new way of thinking about our existence.

The editors and contributors of these ten articles focus on the idea that communication includes both what is happening and being said among participants in a classroom and also the politics, values and ideologies that serve as the foundation of the practice. They describe how communication thereby involves register, representation and contexts through media-human interfaces in the classroom and in interpreting mathematics as a text, how communication in mathematics teaching becomes social interaction in cooperative settings and classroom activities, and how communication translates into practice, community,

identity and policy.

Mathematics, Science, and Postclassical Theory is a unique collection of essays dealing with the intersections between science and mathematics and the radical reconceptions of knowledge, language, proof, truth, and reality currently emerging from poststructuralist literary theory, constructivist history and sociology of science, and related work in contemporary philosophy. Featuring a distinguished group of international contributors, this volume engages themes and issues central to current theoretical debates in virtually all disciplines: agency, causality, determinacy, representation, and the social dynamics of knowledge. In a substantive introductory essay, the editors explain the notion of "postclassical theory" and discuss the significance of ideas such as emergence and undecidability in current work in and on science and mathematics. Other essays include a witty examination of the relations among mathematical thinking, writing, and the technologies of virtual reality; an essay that reconstructs the conceptual practices that led to a crucial mathematical discovery—or construction—in the 19th century; a discussion of the implications of Bohr's complementarity principle for classical ideas of reality; an examination of scientific laboratories as "hybrid" communities of humans and nonhumans; an analysis of metaphors of control, purpose, and necessity in contemporary

biology; an exploration of truth and lies, and the play of words and numbers in Shakespeare, Frege, Wittgenstein, and Beckett; and a final chapter on recent engagements, or nonengagements, between rationalist/realist philosophy of science and contemporary science studies. Contributors. Malcolm Ashmore, Michel Callon, Owen Flanagan, John Law, Susan Oyama, Andrew Pickering, Arkady Plotnitsky, Brian Rotman, Barbara Herrnstein Smith, John Vignaux Smyth, E. Roy Weintraub

Unraveling all the mysteries of the khipu—the knotted string device used by the Inka to record both statistical data and narrative accounts of myths, histories, and genealogies—will require an understanding of how number values and relations may have been used to encode information on social, familial, and political relationships and structures. This is the problem Gary Urton tackles in his pathfinding study of the origin, meaning, and significance of numbers and the philosophical principles underlying the practice of arithmetic among Quechua-speaking peoples of the Andes. Based on fieldwork in communities around Sucre, in south-central Bolivia, Urton argues that the origin and meaning of numbers were and are conceived of by Quechua-speaking peoples in ways similar to their ideas about, and formulations of, gender, age, and social relations. He also demonstrates that their practice of arithmetic is based on a well-articulated body of philosophical principles and values that reflects a continuous attempt to maintain balance, harmony, and equilibrium in the material, social, and moral

spheres of community life.

The landscape of contemporary research is characterized by growing interdisciplinarity, and disciplinary boundaries are blurring faster than ever. Yet while interdisciplinary methods, and methodological innovation in general, are often presented as the 'holy grail' of research, there are few examples or discussions of their development and 'behaviour' in the field. This Routledge Handbook of Interdisciplinary Research presents a bold intervention by showcasing a diversity of stimulating approaches. Over 50 experienced researchers illustrate the challenges, but also the rewards of doing and representing interdisciplinary research through their own methodological developments. Featured projects cover a variety of scales and topics, from small art-science collaborations to the 'big data' of mass observations. Each section is dedicated to an aspect of data handling, from collection, classification, validation to communication to research audiences. Most importantly, Interdisciplinary Methods presents a distinctive approach through its focus on knowledge as process, defamiliarising and reworking familiar practices such as experimenting, archiving, observing, prototyping or translating.

Distinguished scholars discuss the problem of self-deception, or rather, self and deception.

The word "critical" in the title of this collection has three meanings, all of which are relevant. One meaning, as applied to a situation or problem, is "at a point of crisis". A

second meaning is "expressing adverse or disapproving comments or judgments". A third is related to the verb "to critique", meaning "to analyze the merits and faults of". The authors contributing to this book pose challenging questions, from multiple perspectives, about the roles of mathematics in society and the implications for education. Traditional reasons for teaching mathematics include: preparing a new generation of mathematics researchers and a cadre of technically competent users of mathematics; training students to think logically; and because mathematics is as much part of cultural heritage as literature or music. These reasons remain valid, though open to critique, but a deeper analysis is required that recognizes the roles of mathematics in framing many aspects of contemporary society, that will connect mathematics education to the lived experiences of students, their communities, and society in general, and that acknowledges the global ethical responsibilities of mathematicians and mathematics educators. The book is organized in four sections (1) Mathematics education: For what and why? (2) Globalization and cultural diversity, (3) Mathematics, education, and society and (4) Social justice in, and through, mathematics education The chapters address fundamental issues such as the relevance of school mathematics in people's lives; creating a sense of agency for the field of mathematics education, and redefining the relationship between mathematics as discipline, mathematics as school subject and mathematics as part of people's lives.

This ambitious work puts forward a new account of mathematics-as-language that

challenges the coherence of the accepted idea of infinity and suggests a startlingly new conception of counting. The author questions the familiar, classical, interpretation of whole numbers held by mathematicians and scientists, and replaces it with an original and radical alternative--what the author calls non-Euclidean arithmetic. The author's entry point is an attack on the notion of the mathematical infinite in both its potential and actual forms, an attack organized around his claim that any interpretation of "endless" or "unlimited" iteration is ineradicably theological. Going further than critique of the overt metaphysics enshrined in the prevailing Platonist description of mathematics, he uncovers a covert theism, an appeal to a disembodied ghost, deep inside the mathematical community's understanding of counting.

This handbook features essays written by both literary scholars and mathematicians that examine multiple facets of the connections between literature and mathematics. These connections range from mathematics and poetic meter to mathematics and modernism to mathematics as literature. Some chapters focus on a single author, such as mathematics and Ezra Pound, Gertrude Stein, or Charles Dickens, while others consider a mathematical topic common to two or more authors, such as squaring the circle, chaos theory, Newton’s calculus, or stochastic processes. With appeal for scholars and students in literature, mathematics, cultural history, and history of mathematics, this important volume aims to introduce the range, fertility, and complexity of the connections between mathematics, literature, and literary theory.

If certain objects work well, no one notices them. As with "black boxes, " their success may be gauged by their relative invisibility -- and this was the indirect goal of the objects that Julian Yates considers here: the portrait miniature, the relic, the privy (flush toilet), the printed text, and the priest-hole (a secret hiding place for Catholic priests in Protestant England). Because each of these contrivances was prone to error, misuse, and sometimes catastrophic failure, they become in Yates's analysis an occasion for recasting the history of the English Renaissance as object lessons -- "knowing from the point of view of the known." It is through such lapses -- the texts and stories generated to explain away a relic that is too easily faked, a miniature that is too curiously real, the stench of a failing privy, a book that persistently sheds its pages, or the presence of so much "papist trash" in an ostensibly reformed England -- that Yates recovers the silent work of "things" in cultural production. Drawing object lessons from failing technological devices, Error, Misuse, Failure plumbs the foundations of Renaissance culture in England, recovering a curious language of mistakes, dirt, and parasitism that associates the failures of these "things" with the figures of Rome, Catholicism, and Sodom. Yates offers a mode of historical inquiry rooted in material culture, sensitive to the way humans induct nonhumans (animals, plants, and manufactured things) into their communities. Historically, the book offers a new set of stories about the rise of printing, the development of domestic architecture, and England's Catholic community -- stories that remind readers of the ways in whichattending to the history of nonhumans

requires a radical rethinking of historical landmarks and boundaries.

Semetsky's new book offers a bracing account of Tarot semiotics in view of its deep significance for educational experience. Analyzing the symbolic language of Tarot images that express the intimations of the unconscious, she invites readers to explore novel ways of learning about the nature of ourselves and the world we are situated in. Combining thorough research with an accessible style, this groundbreaking book is essential reading for present and future generations of practitioners, academics and students across disciplines. Pia Brînzeu, Professor of English Literature and Vice-Rector of the Universityof Timis ?oara, Romania; author of Corridors of Mirrors. A sequel to the author's Re-Symbolization of the Self: Human Development and Tarot Hermeneutic and Semiotics Education Experience, Semetsky's new book presents the Tarot sign-system as a school of ethical living. Bringing the philosophies of Peirce, Deleuze, Dewey, Whitehead and Gebser in a dialogue with the cutting-edge science of coordination dynamics, she grounds the art of Tarot in the logic of signs acting across nature, culture and human mind. Building on Noddings' "maternal factor", Semetsky demonstrates how the lessons embodied in Tarot symbolism recover the feminine value of relations and contribute to Self~Other integration. Such is the message of Tarot images. The Image is the Message. Igor Klyukanov, Professor of Communication, Eastern Washington University, USA; editor, Russian Journal of Communication; author of A Communication Universe: Manifestations of Meaning, Stagings of Significance.

Semetsky's amalgamation of the techniques of visual communication with the emerging field of edusemiotics is an absolute masterpiece in transdisciplinarity. By forging diverse strands of inquiry into an overall model of how images enhance learning, Semetsky's new book provokes us to take a fresh look at iconic information and is a required reading for everyone who is engaged with the art and science of visual semiotics at the intersection of nature and culture. Marcel Danesi, Professor of Anthropology, University of Toronto, Canada; editor-in-chief, Semiotica; author of The Quest for Meaning: A Guide to Semiotic Theory and Practice. Finally. An in-depth look at Tarot from within the field of semiotics, a perspective that had been inexplicably overlooked until now. As a language of exile from language, Tarot cards are silent words that became images. Here is a book that turns our thirst for symbols into a learning tool. The sign sings in Inna Semetsky's work. Enrique Enriquez, (con)temporary tarot, www.tarologyfilm.com; author of Tarology.

At a time when it is clear that climate change adaptation and mitigation are failing, this book examines how our assumptions about (valid and usable) knowledge are preventing effective climate action. Through a cross-disciplinary, empirically-based analysis of climate science and policy, the book situates the failures of climate policy in the cultural history of prediction and its interfaces with policy. Fava calls into question the current interfaces between scientific research and climate policy by tracing multiple connections between modelling, epistemology, politics, food security, religion, art, and

the apocalyptic. Demonstrating how the current domination of climate policy by models and scenarios is part of the problem, the book examines how artistic practices are a critical location to ask questions differently, rethink environmental futures, and activate social change. The analysis starts with another moment of climatic change in recent western history: the overlap of the Little Ice Age and the "scientific revolution," during which intense climatic, scientific and political change were contemporary with mathematical calculation of the apocalypse. Dealing with the need for complex answers to complex and urgent questions, this is essential reading for those interested in climate action, interdisciplinary research and methodological innovation. The empirical analyses amount to a methodological experiment, across history of science, theology, art theory and history, architecture, future studies, climatology, computer modelling, and agricultural policy. This book is a major contribution to understanding how we are precluding effective climate action, and designing futures that resemble our worst nightmares.

The traditional debate among philosophers of mathematics is whether there is an external mathematical reality, something out there to be discovered, or whether mathematics is the product of the human mind. This provocative book, now available in a revised and expanded paperback edition, goes beyond foundationalist questions to offer what has been called a "postmodern" assessment of the philosophy of mathematics--one that addresses issues of theoretical importance in terms of mathematical experience. By bringing together essays of leading philosophers, mathematicians, logicians, and computer scientists, Thomas Tymoczko

reveals an evolving effort to account for the nature of mathematics in relation to other human activities. These accounts include such topics as the history of mathematics as a field of study, predictions about how computers will influence the future organization of mathematics, and what processes a proof undergoes before it reaches publishable form. This expanded edition now contains essays by Penelope Maddy, Michael D. Resnik, and William P. Thurston that address the nature of mathematical proofs. The editor has provided a new afterword and a supplemental bibliography of recent work.

We are all captivated and puzzled by the infinite, in its many varied guises; by the endlessness of space and time; by the thought that between any two points in space, however close, there is always another; by the fact that numbers go on forever; and by the idea of an all-knowing, all-powerful God. In this acclaimed introduction to the infinite, A. W. Moore takes us on a journey back to early Greek thought about the infinite, from its inception to Aristotle. He then examines medieval and early modern conceptions of the infinite, including a brief history of the calculus, before turning to Kant and post-Kantian ideas. He also gives an account of Cantor's remarkable discovery that some infinities are bigger than others. In the second part of the book, Moore develops his own views, drawing on technical advances in the mathematics of the infinite, including the celebrated theorems of Skolem and Gödel, and deriving inspiration from Wittgenstein. He concludes this part with a discussion of death and human finitude. For this third edition Moore has added a new part, 'Infinity superseded', which contains two new chapters refining his own ideas through a re-examination of the ideas of Spinoza, Hegel, and Nietzsche. This new part is heavily influenced by the work of Deleuze. Also new for the third edition are: a technical appendix on still unresolved questions about different infinite sizes; an

expanded glossary; and updated references and further reading. The Infinite, Third Edition is ideal reading for anyone interested in an engaging and historically informed account of this fascinating topic, whether from a philosophical point of view, a mathematical point of view, or a religious point of view.

Tracing the continuities and trends in the complex relationship between literature and science in the long nineteenth century, this companion provides scholars with a comprehensive, authoritative and up-to-date foundation for research in this field. In intellectual, material and social terms, the transformation undergone by Western culture over the period was unprecedented. Many of these changes were grounded in the growth of science. Yet science was not a cultural monolith then any more than it is now, and its development was shaped by competing world views. To cover the full range of literary engagements with science in the nineteenth century, this companion consists of twenty-seven chapters by experts in the field, which explore crucial social and intellectual contexts for the interactions between literature and science, how science affected different genres of writing, and the importance of individual scientific disciplines and concepts within literary culture. Each chapter has its own extensive bibliography. The volume as a whole is rounded out with a synoptic introduction by the editors and an afterword by the eminent historian of nineteenth-century science Bernard Lightman.

An examination of the challenges of establishing the authenticity of electronic documents—in particular the design of a cryptographic equivalent to handwritten signatures. The gradual disappearance of paper and its familiar evidential qualities affects almost every dimension of contemporary life. From health records to ballots, almost all documents are now digitized at some point of their life cycle, easily copied, altered, and distributed. In Burdens of Proof, Jean-

François Blanchette examines the challenge of defining a new evidentiary framework for electronic documents, focusing on the design of a digital equivalent to handwritten signatures. From the blackboards of mathematicians to the halls of legislative assemblies, Blanchette traces the path of such an equivalent: digital signatures based on the mathematics of public-key cryptography. In the mid-1990s, cryptographic signatures formed the centerpiece of a worldwide wave of legal reform and of an ambitious cryptographic research agenda that sought to build privacy, anonymity, and accountability into the very infrastructure of the Internet. Yet markets for cryptographic products collapsed in the aftermath of the dot-com boom and bust along with cryptography's social projects. Blanchette describes the trials of French bureaucracies as they wrestled with the application of electronic signatures to real estate contracts, birth certificates, and land titles, and tracks the convoluted paths through which electronic documents acquire moral authority. These paths suggest that the material world need not merely succumb to the virtual but, rather, can usefully inspire it. Indeed, Blanchette argues, in renewing their engagement with the material world, cryptographers might also find the key to broader acceptance of their design goals.

Taking God Out of Mathematics and Putting the Body Back inAn Essay in Corporeal SemioticsStanford University Press

The volume draws from Charles S. Peirce's pragmatic philosophy, as well as from diverse areas in contemporary arts and sciences, and certain facets of Buddhist philosophy – especially regarding notions of interconnectedness, self-organization, and co-participation of the knowing subject with her inner world, her socio-cultural world, and her physical environment. Contradictory, complementary, and coalescence are also fundamental

watchwords, in addition to entanglement. 'Contradictory', since conflicts, clashes and inconsistencies there will always be, in spite attempts to resolve them. 'Complementarity', since poles of opposition can at least provisionally be resolved by mediation and moderation, however vaguely and ambiguously, such that consonance might emerge from dissonance, balance from imbalance, and accord from discord. And 'coalescence', since the union of disparities is an ongoing, and always incomplete, process; it is never fixed product. These concepts, along with the key word, entanglement, place Peirce in a new light, giving rise to new questions and possible responses from readers who are searching for alternate means of understanding in our increasingly complex, rapidly globalizing world.

As discrete fields of inquiry, rhetoric and mathematics have long been considered antithetical to each other. That is, if mathematics explains or describes the phenomena it studies with certainty, persuasion is not needed. This volume calls into question the view that mathematics is free of rhetoric. Through nine studies of the intersections between these two disciplines, Arguing with Numbers shows that mathematics is in fact deeply rhetorical. Using rhetoric as a lens to analyze mathematically based arguments in public policy, political and economic theory, and even literature, the essays in this volume reveal how mathematics influences the values and beliefs with which we assess the world and make decisions and how our worldviews influence the kinds of mathematical instruments we construct and accept. In addition, contributors examine how concepts of rhetoric—such as analogy and visuality—have been employed in mathematical and scientific reasoning, including in the theorems of mathematical physicists and the geometrical diagramming of natural scientists. Challenging academic orthodoxy, these scholars reject a math-equals-truth reduction in favor of a more

constructivist theory of mathematics as dynamic, evolving, and powerfully persuasive. By bringing these disparate lines of inquiry into conversation with one another, Arguing with Numbers provides inspiration to students, established scholars, and anyone inside or outside rhetorical studies who might be interested in exploring the intersections between the two disciplines. In addition to the editors, the contributors to this volume are Catherine Chaput, Crystal Broch Colombini, Nathan Crick, Michael Dreher, Jeanne Fahnestock, Andrew C. Jones, Joseph Little, and Edward Schiappa.

The development of theorems in logic is generally thought to be a solitary and purely cerebral activity, and therefore unobservable by sociologists. In Weaving Self-Evidence, French sociologist Claude Rosental challenges this notion by tracing the history of one well-known recent example in the field of artificial intelligence--a theorem on the foundations of fuzzy logic. Rosental's analyses disclose the inherently social nature of the process by which propositions in logic are produced, disseminated, and established as truths. Rosental describes the different phases of the emergence of the theorem on fuzzy logic, from its earliest drafts through its publication and diffusion, discussion and reformulation, and eventual acceptance by the scientific community. Through observations made at major universities and scholarly conferences, and in electronic forums, he looks at the ways students are trained in symbolic manipulations and formal languages and examines how researchers work, interact, and debate emerging new ideas. By carefully analyzing the concrete mechanisms that lead to the collective development and corroboration of proofs, Rosental shows how a logical discovery and its recognition within the scholarly community are by no means the product of any one individual working in isolation, but rather a social process that can be observed and studied.

Weaving Self-Evidence will interest students and researchers in sociology and the history and philosophy of science and technology, and anyone curious about how scientists work.

In the eighteenth century, audiences in Great Britain understood the term ’slavery’ to refer to a range of physical and metaphysical conditions beyond the transatlantic slave trade. Literary representations of slavery encompassed tales of Barbary captivity, the ’exotic’ slaving practices of the Ottoman Empire, the political enslavement practiced by government or church, and even the harsh life of servants under a cruel master. Arguing that literary and cultural studies have focused too narrowly on slavery as a term that refers almost exclusively to the race-based chattel enslavement of sub-Saharan Africans transported to the New World, the contributors suggest that these analyses foreclose deeper discussion of other associations of the term. They suggest that the term slavery became a powerful rhetorical device for helping British audiences gain a new perspective on their own position with respect to their government and the global sphere. Far from eliding the real and important differences between slave systems operating in the Atlantic world, this collection is a starting point for understanding how slavery as a concept came to encompass many forms of unfree labor and metaphorical bondage precisely because of the power of association.

In this book, Rotman argues that mathematics is a vast and unique man-made imagination machine controlled by writing. It addresses both aspects—mental and linguistic—of this machine. The essays in this volume offer an insight into Rotman's project, one that has been called "one of the most original and important recent contributions to the philosophy of mathematics."

This book represents a selection of papers presented at the Fourth Annual Conference of the Society for Chaos Theory in Psychology and the Life Sciences, held at Johns Hopkins

University in Baltimore, June 24-27, 1995. The book reflects the Society as a whole, consisting of applications of nonlinear methodology in psychophysics, neurophysiology, business and social science as well as applications of the nonlinear paradigm to issues arising in psychotherapy and the study of creativity. Unique are contributions on the use of Boolean networks in the study of psychosis and quality of life. Review articles on the appropriate use of time series methods in psychology and psychophysics provide a valuable reference.

This challenging book argues that a new way of speaking of mathematics and describing it emerged at the end of the 16th century. Leading mathematicians began referring to their field in terms drawn from the exploration accounts of Columbus and Magellan. Many of those who promoted the vision of mathematics as heroic exploration also played central roles in developing the most important mathematical innovation of the period?the infinitesimal methods, which the author shows was no coincidence.

Explores the epistemological, experiential and political implications that follow when words are lifted out of language and discursive meaning.

This book gathers the proceedings of the conference "Cultures of Mathematics and Logic," held in Guangzhou, China. The event was the third in a series of interdisciplinary, international conferences emphasizing the cultural components of philosophy of mathematics and logic. It brought together researchers from many disciplines whose work sheds new light on the diversity of mathematical and logical cultures and practices. In this context, the cultural diversity can be diachronical (different cultures in different historical periods), geographical (different cultures in different regions), or sociological in nature.