

# REALISM

- One type is Mathematical Platonism: mathematics is abstract, eternal and unchanging.

# Realism In Mathematics

**Katharina Felka**



## **Realism In Mathematics:**

**Realism in Mathematics** Penelope Maddy, 1990 Mathematicians tend to think of themselves as scientists investigating the features of real mathematical things and the wildly successful application of mathematics in the physical sciences reinforces this picture of mathematics as an objective study For philosophers however this realism about mathematics raises serious questions What are mathematical things Where are they How do we know about them Offering a scrupulously fair treatment of both mathematical and philosophical concerns Penelope Maddy here delineates and defends a novel version of mathematical realism She answers the traditional questions and poses a challenging new one refocusing philosophical attention on the pressing foundational issues of contemporary mathematics [Realism in Mathematics](#) Maddy

Penelope, 1992 **Ontology and the Foundations of Mathematics** Penelope Rush, 2022-02-10 This Element looks at the problem of inter translation between mathematical realism and anti realism and argues that so far as realism is inter translatable with anti realism there is a burden on the realist to show how her posited reality differs from that of the anti realist It also argues that an effective defence of just such a difference needs a commitment to the independence of mathematical reality which in turn involves a commitment to the ontological access problem the problem of how knowable mathematical truths are identifiable with a reality independent of us as knowers Specifically if the only access problem acknowledged is the epistemological problem i e the problem of how we come to know mathematical truths then nothing is gained by the realist notion of an independent reality and in effect nothing distinguishes realism from anti realism in mathematics

**Realism, Mathematics, and Modality** Hartry H. Field, 1991-01-01 **Philosophy of Mathematics** Stewart Shapiro, 1997-08-07 Do numbers sets and so forth exist What do mathematical statements mean Are they literally true or false or do they lack truth values altogether Addressing questions that have attracted lively debate in recent years Stewart Shapiro contends that standard realist and antirealist accounts of mathematics are both problematic As Benacerraf first noted we are confronted with the following powerful dilemma The desired continuity between mathematical and say scientific language suggests realism but realism in this context suggests seemingly intractable epistemic problems As a way out of this dilemma Shapiro articulates a structuralist approach On this view the subject matter of arithmetic for example is not a fixed domain of numbers independent of each other but rather is the natural number structure the pattern common to any system of objects that has an initial object and successor relation satisfying the induction principle Using this framework realism in mathematics can be preserved without troublesome epistemic consequences Shapiro concludes by showing how a structuralist approach can be applied to wider philosophical questions such as the nature of an object and the Quinean nature of ontological commitment Clear compelling and tautly argued Shapiro s work noteworthy both in its attempt to develop a full length structuralist approach to mathematics and to trace its emergence in the history of mathematics will be of deep interest to both philosophers and mathematicians **Practice-dependent Realism and Mathematics** Julian C.

Cole, 2005 Abstract I present a solution to a puzzle concerning the interpretation of mathematical practices Mathematical claims seem to be objective and about objects or structures Furthermore these objects or structures do not appear to be located in the spatio temporal world For these reasons Platonists have suggested that mathematical claims concern domains that are abstract and independent of our intellectual activities Yet if Platonists are correct then something very peculiar is going on Items that are abstract and independent of our intellectual activities cannot influence spatio temporally instantiated activities like mathematical practices Contemporary authors have responded to this observation in two distinct ways Some have argued that mathematics should be understood as a fiction Others hold that the surface grammar of mathematical claims is misleading they are really claims about what is logically possible or necessary A philosopher who accepts either suggestion must pay a high price Specifically s he expresses a problematic lack of respect for actual mathematical practice As a solution to this puzzle I articulate and defend a new metaphysical interpretation of mathematics According to this interpretation mathematical domains are constituted by the mathematical activities of rational beings in a way analogous to the constitution of laws and legal borders by the legislative activities of rational beings The presence of appropriate types of mathematical activity is both necessary and sufficient for the existence of particular mathematical domains just as the presence of appropriate types of legislative activity is both necessary and sufficient for the existence of particular laws Yet while laws are constituted by explicit stipulation mathematicians constitute mathematical domains by providing coherent and adequate characterizations of those domains My interpretation of mathematics offers an authentic solution to this puzzle since my solution takes mathematics to be about the very things it seems to be about It interprets mathematicians as making literal claims And it is not affected by the peculiarity associated with Platonism Finally this view which I call practice dependent realism contains the resources for a novel account of the objectivity necessity and applicability of mathematical truth

**Objectivity, Realism, and Proof** Francesca Boccuni, Andrea Sereni, 2016-07-05 This volume covers a wide range of topics in the most recent debates in the philosophy of mathematics and is dedicated to how semantic epistemological ontological and logical issues interact in the attempt to give a satisfactory picture of mathematical knowledge The essays collected here explore the semantic and epistemic problems raised by different kinds of mathematical objects by their characterization in terms of axiomatic theories and by the objectivity of both pure and applied mathematics They investigate controversial aspects of contemporary theories such as neo logicist abstractionism structuralism or multiversism about sets by discussing different conceptions of mathematical realism and rival relativistic views on the mathematical universe They consider fundamental philosophical notions such as set cardinal number truth ground finiteness and infinity examining how their informal conceptions can best be captured in formal theories The philosophy of mathematics is an extremely lively field of inquiry with extensive reaches in disciplines such as logic and philosophy of logic semantics ontology epistemology cognitive sciences as well as history and philosophy of mathematics and science By bringing together well known scholars

and younger researchers the essays in this collection prompted by the meetings of the Italian Network for the Philosophy of Mathematics FilMat show how much valuable research is currently being pursued in this area and how many roads ahead are still open for promising solutions to long standing philosophical concerns Promoted by the Italian Network for the Philosophy of Mathematics FilMat

*A Realist Philosophy of Mathematics* Gianluigi Oliveri, 2007 The realism anti realism debate is one of the traditional central themes in the philosophy of mathematics The controversies about the existence of the irrational numbers the complex numbers the infinitesimals etc will be familiar to all who are acquainted with the history of mathematics This book aims mainly at presenting and defending a non Platonist form of mathematical structural realism which in the respect of the history of mathematics harmonizes with a plausible epistemology that naturally arises from it Gianluigi Oliveri's book embodies a masterly survey of salient questions in the philosophy of mathematics and propounds a challenging if controversial theory of the subject Michael Dummett

Husserl and Realism in Logic and Mathematics Robert S. Tragesser, 1984-02-16 Mathematics and logic present crucial cases in deciding whether the world is of our making or whether some form of realism is true Edmund Husserl who was initially a mathematician discusses this general question extensively but although his views influenced the Dutch intuitionists and were taken very seriously by G del they have not been widely appreciated among analytical philosophers In this book Robert Tragesser sets out to determine the conditions under which a realist ontology of mathematics and logic might be justified taking as his starting point Husserl's treatment of these metaphysical problems He does not aim primarily at an exposition of Husserl's phenomenology although many of the central claims of phenomenology are clarified here Rather he exploits its ideas and methods to show how they can contribute to answering Michael Dummett's question Realism or Anti Realism In doing so he makes a challenging and provocative contribution to the debate

**Mathematics as a Science of Patterns** Michael D. Resnik, 1997 Mathematics as a Science of Patterns is the definitive exposition of a system of ideas about the nature of mathematics which Michael Resnik has been elaborating for a number of years In calling mathematics a science he implies that it has a factual subject matter and that mathematical knowledge is on a par with other scientific knowledge in calling it a science of patterns he expresses his commitment to a structuralist philosophy of mathematics He links this to a defence of realism about the metaphysics of mathematics the view that mathematics is about things that really exist Resnik's distinctive philosophy of mathematics is here presented in an accessible and systematic form it will be of value not only to specialists in this area but to philosophers mathematicians and logicians interested in the relationship between these three disciplines or in truth realism and epistemology

*Talking about Numbers* Katharina Felka, 2016 For thousands of years philosophers have discussed the question of whether numbers exist Surprisingly there are very easy arguments from commonly accepted truths that seem to decide the question For instance it is a commonly accepted truth that Obama has two hands If Obama has two hands then the number of Obama's hands is two and thus numbers exist If such arguments were convincing ontological disputes about the

existence of numbers could be decided simply by pointing to Obama's hands. The book offers a defense of the profoundness of traditional ontological questions by showing that the easy arguments in question are based on false linguistic assumptions. To do so it engages with recent linguistic research and develops analyses of the pertinent sentences that are of interest far beyond the metaontological question at hand.      **Realism in Mathematics and Modality** Michael Barour Papazian, 1991

*Arithmetic and Ontology* Philip Hugly, Charles Sayward, 2016-08-09 This volume documents a lively exchange between five philosophers of mathematics. It also introduces a new voice in one central debate in the philosophy of mathematics. Non-realism, i.e. the view supported by Hugly and Sayward in their monograph, is an original position distinct from the widely known realism and anti-realism. Non-realism is characterized by the rejection of a central assumption shared by many realists and anti-realists, i.e. the assumption that mathematical statements purport to refer to objects. The defense of their main argument for the thesis that arithmetic lacks ontology brings the authors to discuss also the controversial contrast between pure and empirical arithmetical discourse. Colin Cheyne Sanford Shieh and Jean Paul Van Bendegem, each coming from a different perspective, test the genuine originality of non-realism and raise objections to it. Novel interpretations of well-known arguments, e.g. the indispensability argument and historical views, e.g. Frege, are interwoven with the development of the authors' account. The discussion of the often neglected views of Wittgenstein and Prior provides an interesting and much needed contribution to the current debate in the philosophy of mathematics.      **Mathematical Anti-Realism and Modal**

**Nothingism** Mark Balaguer, 2023-01-05 This Element defends mathematical anti-realism against an underappreciated problem with that view, a problem having to do with modal truthmaking. Part I develops mathematical anti-realism; it defends that view against a number of well-known objections and it raises a less widely discussed objection to anti-realism, an objection based on the fact that anti-realists need to commit to the truth of certain kinds of modal claims and that it is not clear that the truth of these modal claims is compatible with mathematical anti-realism. Part II considers various strategies that anti-realists might pursue in trying to solve this modal truth problem with their view; it argues that there is only one viable view that anti-realists can endorse in order to solve the modal truth problem and it argues that the view in question, which is here called modal nothingism, is true.      *The Philosophy of Mathematics Today* Matthias Schirn, 2003

Representing the state of the art in the field of the philosophy of mathematics, this collection of 20 essays deals with fundamental issues ranging from the nature of mathematical knowledge to sets and natural number.      *Naturalism in Mathematics* Penelope Maddy, 1997-11-13 Our much-valued mathematical knowledge rests on two supports: the logic of proof and the axioms from which those proofs begin. Naturalism in Mathematics investigates the status of the latter, the fundamental assumptions of mathematics. These were once held to be self-evident, but progress in work on the foundations of mathematics, especially in set theory, has rendered that comforting notion obsolete. Given that candidates for axiomatic status cannot be proved, what sorts of considerations can be offered for or against them? That is the central question addressed in

this book One answer is that mathematics aims to describe an objective world of mathematical objects and that axiom candidates should be judged by their truth or falsity in that world This promising view realism is assessed and finally rejected in favour of another naturalism which attends less to metaphysical considerations of objective truth and falsity and more to practical considerations drawn from within mathematics itself Penelope Maddy defines this naturalism explains the motivation for it and shows how it can be helpfully applied in the assessment of candidates for axiomatic status in set theory Maddy's clear original treatment of this fundamental issue is informed by current work in both philosophy and mathematics and will be accessible and enlightening to readers from both disciplines

Explanation in Ethics and Mathematics Uri D. Leibowitz, Neil Sinclair, 2016-05-27 How far should our realism extend For many years philosophers of mathematics and philosophers of ethics have worked independently to address the question of how best to understand the entities apparently referred to by mathematical and ethical talk But the similarities between their endeavours are not often emphasised This book provides that emphasis In particular it focuses on two types of argumentative strategies that have been deployed in both areas The first debunking arguments aims to put pressure on realism by emphasising the seeming redundancy of mathematical or moral entities when it comes to explaining our judgements In the moral realm this challenge has been made by Gilbert Harman and Sharon Street in the mathematical realm it is known as the Benacerraf Field problem The second strategy indispensability arguments aims to provide support for realism by emphasising the seeming intellectual indispensability of mathematical or moral entities for example when constructing good explanatory theories This strategy is associated with Quine and Putnam in mathematics and with Nicholas Sturgeon and David Enoch in ethics Explanation in Ethics and Mathematics addresses these issues through an explicitly comparative methodology which we call the companions in illumination approach By considering how argumentative strategies in the philosophy of mathematics might apply to the philosophy of ethics and vice versa the papers collected here break new ground in both areas For good measure two further companions for illumination are also broached the philosophy of chance and the philosophy of religion Collectively these comparisons light up new questions arguments and problems of interest to scholars interested in realism in any area

*Truth in Mathematics* Harold G. Dales, Gianluigi Oliveri, 1998 The nature of truth in mathematics is a problem which has exercised the minds of thinkers from at least the time of the ancient Greeks The great advances in mathematics and philosophy in the twentieth century and in particular the proof of Gödel's theorem and the development of the notion of independence in mathematics have led to new viewpoints on this question in our era This book is the result of the interaction of a number of outstanding mathematicians and philosophers including Yuri Manin Vaughan Jones and Per Martin Lf and their discussions of this problem It provides an overview of the forefront of current thinking and is a valuable introduction and reference for researchers in the area

The Oxford Handbook of Philosophy of Mathematics and Logic Stewart Shapiro, William J. Wainwright, 2005-02-10 Covers the state of the art in the philosophy of maths and logic giving the reader

an overview of the major problems positions and battle lines The chapters in this book contain both exposition and criticism as well as substantial development of their own positions It also includes a bibliography

**Contemporary Perspectives in Philosophy and Methodology of Science** Wenceslao J. González, 2006

Nowadays philosophy and methodology of science appear as a combination of novelty and continuity This blend is clear both in the general approaches to science those thought of as any science and in the specific perspectives on every science either formal or empirical There are new topics for philosophical reflection such as key issues in philosophy of medicine and central problems raised by neuroscience Thus new contents have brought attention to aspects that previously went almost unnoticed In addition there are new angles for philosophical study such as the repercussion of society on scientific activity in aims processes and results But the background of the main philosophical and methodological trends of the twentieth century is in many ways still in place



## Unveiling the Energy of Verbal Beauty: An Mental Sojourn through **Realism In Mathematics**

In some sort of inundated with screens and the cacophony of fast transmission, the profound energy and emotional resonance of verbal beauty frequently fade into obscurity, eclipsed by the constant assault of noise and distractions. However, set within the lyrical pages of **Realism In Mathematics**, a interesting work of literary elegance that pulses with organic emotions, lies an wonderful journey waiting to be embarked upon. Composed by way of a virtuoso wordsmith, this mesmerizing opus books readers on an emotional odyssey, delicately revealing the latent possible and profound affect embedded within the complicated web of language. Within the heart-wrenching expanse of this evocative analysis, we will embark upon an introspective exploration of the book is key themes, dissect their interesting writing model, and immerse ourselves in the indelible impact it leaves upon the depths of readers souls.

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