



POMSIGMAA Newsletter

Spring-Summer 2011

Greetings from the Executive Board of POMSIGMAA, the Special Interest Group of the Mathematical Association of America for the Philosophy of Mathematics. If you have items to include in the newsletter – interesting events coming up in the philosophy of mathematics, for instance – please contact the Public Information Officer, Bonnie Gold, bgold@monmouth.edu.

Results of POMSIGMAA spring election

The following officers were elected by members of POMSIGMAA this spring; they take office following the January joint meetings in 2012: Chair-elect: Daniel Slougher, Furman University; Program Director: Thomas Drucker, University of Wisconsin-Whitewater; Treasurer: James Henderson, University of Pittsburgh at Titusville

Upcoming POMSIGMAA activities

We have an unusually extensive collection of POMSIGMAA activities coming up, with three different activities at the joint meetings this winter in Boston. But first,

August 4-6, 2011 MathFest in Lexington, KY

At MathFest 2011 in Lexington, KY, at 5:30 p.m. on August 4, Professor Neil Tennant, of the Department of Philosophy of The Ohio State University will give the POMSIGMAA guest lecture, "**Natural Logicism for Mathematics**," preceded by a reception at 5:00.

Abstract: *Logicism* was the view that the truths of number theory and analysis were 'logical truths in disguise'. Logicism had fallen out of favor by the 1930s. Mathematical foundationalists turned to first-order set theory, which had no pretensions of being 'just logic'. Set theory employed powerful existence assumptions that enabled it to serve as a unifying theory for all branches of mathematics.

Natural deduction was invented by Gerhard Gentzen in the mid-1930s. It is a system of logical proof based on so-called introduction and elimination rules of inference for the usual logical expressions---connectives, quantifiers and the identity predicate.

A mathematical foundation of set theory, developed strictly formally in the system of first-order natural

deduction, has various drawbacks. Mathematical statements have to be laboriously transcribed into set-theoretical notation. And significant portions of one's formalization of any ordinary mathematical proof end up having more to do with unpacking arbitrarily chosen set-theoretic definitions than with pursuing the mathematical 'line of thought' within the mathematical proof itself.

The contemporary *natural logicist* is concerned to re-visit the issue of logicism, equipped now with more advanced methods of natural deduction. The aim is to regiment mathematical reasoning as one finds it, in the native terms of the various branches of mathematics. New rules are given, for introducing and eliminating important mathematical concepts and constructions. Natural logicism calls, in effect, for a theory of natural deduction for *logico-mathematical* reasoning. Formalizations of mathematical proofs should capture their endogenous 'lines of thought', and not be cluttered with the extra moves occasioned by an extraneous foundation. Natural logicism is a research program calling for a clearer understanding of both the conceptual constructs and the abstract structures of mathematics.

January 4 – 7, 2012 joint AMS/MAA meetings in Boston, MA

A **guest lecture** by **Barry Mazur**, Harvard University, speaking on "What is a heuristic?" in conjunction with our annual business meeting and reception on **Thursday, January 5**: Business meeting at 5:45; talk starts at 6:15. The abstract will be posted on the POMSIGMAA website.

A POMSIGMAA-sponsored **invited paper session** (organized by Thomas Drucker, Bonnie Gold, and Daniel Sloughter) on **Wednesday, January 4**, starting at 2:15 p.m. We have an all-star cast: **Arthur Jaffe** and **Charles Parsons**, both at Harvard, **Jody Azzouni** at Tufts University, **Juliet Floyd** at Boston University, **Agustin Rayo** and **Stephen Yablo** both at MIT. Titles and abstracts so far:

Jody Azzouni: "Formal logic and informal-rigorous mathematical proof "

Arthur Jaffe: "Is Mathematics the Language of Physics?"

Charles Parsons: "Structuralism and its discontents." Description: I would try to explain very briefly the aspect of the idea of "structuralism" that I have explored and then say something about objections that bear on the views I have arrived at.

Agustin Rayo: "A Trivialist Account of Mathematics"

Stephen Yablo: "Explanation and Existence" Abstract: Platonists hold that mathematical objects "really exist." Nominalists deny this. The standard argument for platonism, which emphasizes the indispensability of mathematics to physical science, has fallen on hard times lately. Why should calculus have to be true, to help with the representation of facts about the motion of bodies? Platonists have responded that math also plays an explanatory role—e.g. honeycomb has a hexagonal structure because that is the most efficient way to divide a surface into regions of equal area. Two questions, then. Can physical outcomes occur for mathematical reasons? If so, how does this bear on debates about the existence of mathematical objects?

And we again have a **Contributed Paper Session**, on **Friday afternoon, January 6**: *Philosophy of Mathematics and Mathematical Practice*. Description: Philosophers search for insights into the most general epistemological and ontological questions: How do we know, and what is it that we know? Since mathematical knowledge is a significant piece of what we know, an explanation of the nature of mathematics plays an important role in philosophy. To this end, a philosopher of mathematics must pay careful attention

to mathematical practice, what it is that mathematicians claim to know and how they claim to know it. A philosopher's explanation of mathematics cannot be a local explanation: it must fit within the larger picture of knowledge as a whole. A mathematician may have an account of mathematics which suffices for her work, but unless this account fits coherently into a larger epistemological and ontological picture, it will not suffice as a philosophy of mathematics. This session will address questions concerning the relationship between the philosophy and the practice of mathematics. We encourage papers to address questions such as: Should the philosophy of mathematics influence, or be influenced by, the practice of mathematics? Is it necessary for the philosophy of mathematics to influence the practice of mathematics for it to be relevant to mathematicians?

To submit an abstract for this session, go to <http://jointmathematicsm meetings.org/meetings/abstracts/abstract.pl?type=jmm> and follow the instructions. Under "Select an Event", our contributed paper session is about 3/4 of the way down, "MCP SLO K1 - MAA Session on Philosophy of Mathematics and Mathematical Practice." The (absolutely firm) deadline for submissions is September 22, 2011.

Activities at future meetings

MathFest 2012, Madison, WI, August 2-4, 2012

We intend to have a guest speaker, whom we are in the process of inviting, and a reception.

January 9-12, 2013 joint AMS/MAA meetings in San Diego, CA
POMSIGMAA will have its annual business meeting, reception, and invited address, and will submit a request for a contributed paper session.

See the Activities and Upcoming Events page at sigmaa.maa.org/pom/PomSigmaa/POMactivities.html for updates.

Other events of interest to the Philosophy of Mathematics Community

July 15 - 17, 2011, the Annual Meeting of the Canadian Society for the History and Philosophy of Mathematics will be held in Dublin, Ireland in conjunction with the [British Society for the History of Mathematics](#). See the CSHPM/SCHPM web page, <http://www.cshpm.org/>, for more details.

July 19 - 26, 2011, the [14th Congress of Logic, Methodology, and Philosophy of Science](#) will be held in Nancy, France. The special focus of the congress will be, "Logic and science facing new technologies."

November 5-6, 2011, the 12th annual Midwest PhilMath Workshop (MWPMW 12) will be held at Notre Dame. It will include a special symposium on "The Nature of Mathematical Reasoning." Featured speakers will include Pr. Lance Rips (Psychology, Northwestern), Pr. Martin Monti (Psychology, UCLA) and Pr. Alan Bundy (Informatics, Edinburgh). Also other special sessions being planned for November 3 and 4. For more information, follow the link on the department's website, <http://www.nd.edu/~ndphil/>.

November 7 - 10, 2011, the [International Conference on the History and Philosophy of Computing](#) will be held at the Centre for Logic and Philosophy of Science, Ghent University, Belgium. Topics at the conference will include philosophical, foundational and practical issues of computability in logic, mathematics and computer science.

Communications

Please be sure that the e-mail address the MAA has for you is current. We send out a newsletter once a year, but beyond that all communication is electronic. To receive communication about upcoming events and elections, but not be on the list serve, contact the Public Information Officer (Bonnie Gold, bgold@monmouth.edu).

POMSIGMAA's Web Page has moved

As of last summer, POMSIGMAA's web page moved to the MAA's site. This should simplify the transitions, as one Public Information Officer replaces another, as well as ensure a dependable home for it. The page is now sigmaa.maa.org/pom and can also be accessed from the MAA's homepage by clicking on SIGMAAs.

Current Officers of POMSIGMAA:

Chair (through 1-13, then 1 year as past-chair) Carl Behrens, Alexandria, VA, CBEHRENS@crs.loc.gov

Past Chair (through 1-12) Kevin Iga, Pepperdine University, Kevin.Iga@pepperdine.edu

Program Director (through 1-12) Daniel Slougher, Furman University, dan.slougher@furman.edu

Secretary (through 1-13) Mike Scudder, MicroTools, Inc., Simsbury, CT, scudder_mike@yahoo.com

Treasurer (through 1-12) Thomas Drucker, University of Wisconsin-Whitewater, druckert@uww.edu

Public Information Officer (through 1-16) Bonnie Gold, Monmouth University, bgold@monmouth.edu