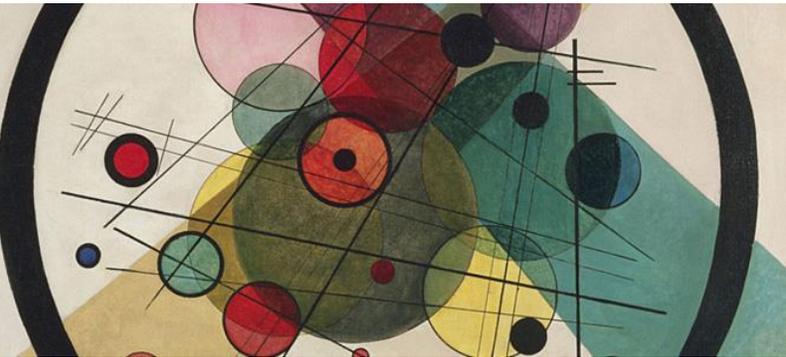


Logic, Mathematics, and Philosophy



International Conference Purdue University September 19-20, 2014

Organized by the Philosophy and Literature Interdisciplinary Program
With the support of the Partner University Fund
a program of the French American Cultural Exchange
as part of the “Analytic and French Philosophy in the 20th Century” project
Purdue University / Université de Paris Ouest Nanterre

<http://www.cla.purdue.edu/philosophy/events/logicsmathematics.html>

“Logic, Mathematics, and Philosophy” Conference **Friday-Saturday, September 19-20, 2014**

The “Logic, Mathematics, and Philosophy” conference brings together philosophers, logicians, and mathematicians from both the analytic and European traditions in order to foster conversation about and advance the understanding of the key issues currently animating both traditions and having a broad impact in the academy and culture at large.

The conference is the second event of a three-year joint project between the University of Paris 10, Nanterre, and Purdue University, made possible through the generous support of a grant from the *Partner University Fund* (<http://www.facecouncil.org/puf/>), and contributions from both Nanterre and Purdue. Established in 2007, the PUF is a collaboration between the French government and the Andrew W. Mellon Foundation to support academic partnerships between French and American institutions of higher education at the graduate and post-doctoral levels. The first event was a week-long seminar on “Contemporary French Philosophy and the Analytic Tradition,” which took place at the University of Paris–Nanterre in on 23-27 July 2014.

Sessions will be held on the Purdue University West Lafayette campus in the Yue-Kong Pao Hall of Visual and Performing Arts, Room 1197

Plenary Speaker:

Simon Duffy, Philosophy, Yale-NUS College, Singapore

Keynote Speakers:

Arkady Plotnitsky, English, Purdue University

Jean-Michel Salanskis, Philosophy, University of Paris–Nanterre

Presenters:

Elie During, Philosophy, University of Paris–Nanterre

Brice Halimi, Philosophy, University of Paris–Nanterre

Ralph Kaufmann, Mathematics, Purdue University

David McCarty, Philosophy, Indiana University

James McClure, Mathematics, Purdue University

Pierrot Seban, Philosophy, University of Paris–Nanterre

Chris Yeomans, Philosophy, Philosophy and Literature Program, Purdue University

Purdue Organizers:

Daniel W. Smith, Philosophy, Philosophy and Literature Program, smith132@purdue.edu

Arkady Plotnitsky, English, Philosophy and Literature Program, plotnits@purdue.edu

Sandor Goodhart, English, Philosophy and Literature Program, goodhart@purdue.edu

We would like to thank Ashley Albrecht and Patrick Hoberg, both graduate students in the Philosophy and Literature interdisciplinary program, for their generous assistance in organizing and hosting the conference.

Conference Program

Sessions will be held in the Yue-Kong Pao Hall of Visual and Performing Arts,
Room 1197

Friday, September 19

- 8:30am-9:30am Continental Breakfast (provided in PAO 1197)
9:00am-9:15am Welcome, **Debasish Dutta**, Provost and Executive Vice President
for Academic Affairs, Purdue University
9:15am-9:30am Opening Remarks, **Arkady Plotnitsky**, Professor, Department of
English, Purdue University

Opening Keynote Address

- 9:30am-10:45am **Jean-Michel Salanskis**, Philosophy, University of Paris–Nanterre
“Speaking Philosophically About Mathematics”

Session I

- 10:45am-12:00noon **Pierrot Seban**, Philosophy, University of Paris–Nanterre
“Can Achilles Catch a Tortoise?, or: What Should We Do with Logic
and Math?”
12:15pm-1:30pm Lunch (provided), in the Department of Philosophy
Vision 21 Room, Beering Hall, Seventh Floor

Session II

- 1:45pm-3:00pm **Chris Yeomans**, Philosophy, Purdue University
“Hegel on Real Numbers”
3:00pm-4:15pm **David McCarty**, Philosophy, Indiana University
“A Calculus of Desire: Style in Mathematics”
4:15pm-4:30pm Break

Plenary Address

- 4:30pm-6:00pm **Simon Duffy**, Philosophy, Yale-NUS College, Singapore
“Tolerance, Pragmatism and Mathematics”
7:00pm Dinner (for conference presenters) at Bistro 501, 501 Main St.,
Lafayette

Saturday, September 20

Sessions will be held in the Yue-Kong Pao Hall of Visual and Performing Arts,
Room 1197

10:00-10:30am Continental Breakfast (provided in PAO 1197))

Session I

10:30am-11:45am **Elie During**, Philosophy, University of Paris–Nanterre
“Varieties of Non-Existence: Fictional Objects, Vague Essences,
Vanishing Intensities”

11:45am-1:00pm **Brice Halimi**, Philosophy, University of Paris–Nanterre
“Benacerraf’s Mathematical Antinomy”

1:00pm-2:30pm Lunch (provided), in the foyer of Pao Hall

Session II

2:30pm-3:15pm **James McClure**, Mathematics, Purdue University
“Some Reflections on Husserl, Jacob Klein and Mathematics”

3:15pm-4:30pm **Ralph Kaufmann**, Mathematics, Purdue University
“Truth or Beauty: What Can Mathematical Language Do For You?”

4:30pm-4:45pm Break

Closing Keynote Address

4:45pm-6:00pm **Arkady Plotnitsky**, English, Purdue University
“Mathematics beyond Logic: Bernhard Riemann and the Architecture
of Mathematical Concepts”

7:00pm Closing Reception
At the home of Daniel W. Smith and Catherine Dossin
216 S. 6th St., #3A, downtown Lafayette

Abstracts

Brice Halimi, Philosophy, University of Paris–Nanterre
“Benacerraf’s Mathematical Antinomy”

Benacerraf’s paper entitled “Mathematical Truth” (1973) takes on the form of a well-known dilemma. Either a uniform semantics for ordinary language is extended to mathematical language, but then one lapses into Platonism. Or a reasonable epistemology of mathematical knowledge as a proof activity is put forward, but then no account of mathematical truth other than formal is given. Benacerraf’s text does not provide any clear solution.

“Benacerraf’s dilemma” has been the focus of analytic philosophy of mathematics since it was written. It also has put off French philosophers of mathematics as simplistic and out of touch with real mathematics. In my talk, I would endorse a balanced perspective and suggest that a comparison between Benacerraf’s dilemma and Kant’s mathematical antinomies is called for by strong analogies. (The so-called “mathematical antinomies” are the first two antinomies of pure reason, whose opponents, Kant argues, are wrong.) My aim is to harness the analogy with Kant so as to explore the possibility of transposing Kant’s solution to Benacerraf’s setting.

Simon Duffy, Philosophy, Yale-NUS College, Singapore
“Tolerance, Pragmatism and Mathematics”

What I claim in this paper is that Deleuze’s metaphysics, and the ontological commitments it seems to imply, can be understood in a deflationary way to be a metaphysics of the calculus that draws upon a conception of mathematics that is steeped in the implications of a subject naturalist pragmatist approach to the question of mathematical foundations. I argue that Deleuze’s deflationary metaphysics is consonant in useful ways with the subject naturalist pragmatism proposed by Macarthur and Price (2007). One preliminary consonance being that the conception of mathematics that Deleuze develops does not serve the same reductive ends that ‘capital N Naturalism’ requires, but rather it serves as a useful tool for modelling the nature of our relation to the world without the representational presuppositions of the latter. One way of characterizing this conception of mathematics is to look to the deflationary character of Carnap’s philosophy of mathematics and the principle of tolerance that he advocates with respect to foundational questions in mathematics (Carnap 1937). The aim of this paper is therefore to test the degree to which Deleuze’s philosophy can be reconciled with Carnap’s deflationary philosophy of mathematics and the subject naturalist approach to pragmatism put forward by Macarthur and Price.

Elie During, Philosophy, University of Paris–Nanterre
“Varieties of Non-Existence: Fictional Objects, Vague Essences, Vanishing Intensities”

TBA

Ralph Kaufmann, Mathematics, Purdue University
“Truth or Beauty: What Can Mathematical Language Do For You?”

TBA

David McCarty, Philosophy, Indiana University
“A Calculus of Desire: Style in Mathematics”

I provide a detailed description, a poetics, of a characteristic episode in the history of mathematics. The description is constructed along lines suggested by Kant, Schiller, and Gadamer. Against its background, expressions of such philosophies of mathematics as Platonism and constructivism appear as contributors to the objectification of personal styles. In this way, mathematicians convert personal or subjective styles into taxonomic or objective styles that exercise authority over future mathematics. The talk is intended to be suitable for a general philosophical audience. Logical and mathematical details of a technical sort will not be presupposed.

James McClure, Mathematics, Purdue University
“Some Reflections on Husserl, Jacob Klein and Mathematics”

When I was first being trained as a mathematician, as an undergraduate, one of the things my instructors offered as part of my enculturation was a loose collection of philosophical beliefs. I think that many mathematicians (perhaps most) have some version of these beliefs as part of their thinking about mathematics, so I'll call this collection of beliefs MPP (Mathematician's Pop Philosophy). MPP includes beliefs about the ontology of cardinal numbers and real numbers, and also about the role of definitions. In the talk I'll discuss the relationship between MPP and the work of Husserl and Jacob Klein.

Arkady Plotnitsky, English, Purdue University
“Mathematics Beyond Logic: Bernhard Riemann and the Architecture of Mathematical Concepts”

Bernhard Riemann's work has always been considered as one of the main examples, and sometimes as the inaugural example, of conceptual mathematics, although usually in juxtaposition to calculation rather than, as in this paper, logic. On the other hand, the nature of mathematical concepts, in Riemann and in general, has rarely been addressed, and even the concept of mathematical concept has rarely been defined. By using Riemann's concept of manifoldness (*Mannigfaltigkeit*) as the primary historical example, this paper will offer a new definition of mathematical concept and will consider the nature of modern mathematics as the creation of new concepts. This concept of mathematical concept follows but also departs from Deleuze and Guattari's concept of philosophical concepts, and more generally their understanding of the relationships between philosophy and mathematics, or among philosophy, mathematics, and logic. I shall also briefly discuss topos theory and noncommutative geometry from this perspective.

Jean-Michel Salanskis, Philosophy, University of Paris–Nanterre
“Speaking Philosophically About Mathematics”

In the paper, I simply wish to give an overview of how two different ways of speaking philosophically about mathematics may be confronted, suggesting various discussions.

First, I shall define and stage my protagonists: analytic philosophy of mathematics on the one side, French philosophy of mathematics on the other side (temporal scope being limited to 20th and 21st century). In the following section, I shall compare both schools by asking them 'external' questions. In that perspective, I shall first examine how they dealt with elements of Kantian doctrine, at the same time taking them into account and dismissing them. And then I shall have a look on how they reacted to constructive conception of

mathematics. In the last section, I will try a more personal approach. Recalling how I defined philosophy of mathematics and the five questions it has to address in my 2008 book *Philosophie des mathématiques*, I will outline a comparison between analytic and French works with respect to those five questions.

Pierrot Seban, Philosophy, University of Paris–Nanterre
“Can Achilles Catch a Tortoise?, or: What Should We Do with Logic and Math?”

We can understand Zeno’s paradoxes on motion (or more specifically “Achilles” and “The dichotomy”) as an attempt to demonstrate an incompatibility between, on the one hand, motion – by which I mean something like the process of “going on”, or the analytical A-time – and on the other hand a mathematical analysis of continuity. I will try in my presentation to focus on one aspect of the variety of contemporary solutions, that is, the “differend” over what we, as philosophers, should do with math (and, if I have time, with logic). The mainstream “analytical” solution is, basically, carte blanche given to Cantor’s set theoretical treatment of infinity and the continuum, and a mathematization of reality as a logical or physical space (that is, set) over which univocal predication can be made. Motion as such is then driven out of reality. Of course, this fundamental gesture is not the only one available. Another starting point may lead to drive mathematics and mathematically construed entities out of reality, in the name of a philosophy of experience, whereas the problem could also be mathematical as such, the fault come from the set theoretical notion of actual infinities, and an Aristotelian solution be revived by the mathematical (constructivist) rebuttal of it. In every case, logic, that is to say the way we ought to use language and truth, is to be put at stake.

Chris Yeomans, Philosophy, Purdue University
“Hegel on Real Numbers”

We attribute three major mathematical insights to Hegel: first, an understanding of the real numbers as the paradigmatic kind of number (which also accords with their role in physical measurement); second, a recognition that a quantitative relation has three elements (the two things being related and the relation itself), which is embedded in his conception of measure; and third, a recognition of the phenomenon of divergence of measures such as in second-order phase transitions in which correlation length diverges.

