

Les théories des axiomes au XVIIe siècle

Theories of Axioms in the 17th Century

June 13th, 2022
9:30 – 17:00

Séminaire de histoire et philosophie des mathématiques
Laboratoire SPHère – Science Philosophie Histoire, UMR 7219

Université de Paris Cité, Bâtiment Condorcet
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Salle Rothko, 412 B (4^e étage / 4th Floor)

9:00 *Accueil / Welcome*

9:30-10:30 MOGENS LAERKE (CNRS, Maison Française d'Oxford / IHRIM, ENS de Lyon)
Consensus and Common Notions in Early Modern Theory of Knowledge

In this presentation, I want to outline a research programme. The history of the early modern theory of knowledge is routinely depicted as a story about how epistemologies based on authority, tradition, and general agreement were replaced by epistemologies based on criteria of self-evidence or empirical observation. And yet, when looking beyond the traditional rationalist-empiricist alternative into which that narrative feeds, arguments from general agreement begin to resurface everywhere, and for good reason. In this paper, I argue that early modern philosophy did and indeed had to endorse some positive conception of the intrinsic value of collective knowledge acquisition. I moreover suggest how this conception was broadly expressed in the very diverse early modern reception of the originally Stoic notion of so-called “common notions.”

Pause / Break

10:45-11:45 DANA JALOBEANU (ICUB-Humanities & Department of Theoretical Philosophy, University of Bucharest)
Francis Bacon on Axioms, Laws, Rules and Principles: An investigation into the aggregation of a scientific vocabulary

Francis Bacon is rarely mentioned in the histories of the emergence of a concept of laws of nature. His philosophy does not seem to contain a conception of laws as regularities; but he does treat the subject and has a very rich vocabulary to refer to it. The trouble is that he talks, sometimes indistinguishably, of laws, forms, principles and axioms, precepts, maxims and rules. My purpose in this talk is to review and clarify some of this vocabulary and to show that Bacon's terminological struggles are philosophically interesting and scientifically relevant. I show that we can find in Bacon a change and evolution of this vocabulary, corresponding to the phases of growth and maturation of his conception of science. What we can see especially in his late natural and experimental history is a form of aggregation of a scientific vocabulary.

Pause / Break

12:00-13:00 ÉLODIE CASSAN (UMR 5317, CNRS, ENS de Lyon)

Towards the shaping of a logic ? Remarks about Descartes' May 24th 1640 Letter to Regius

In the seventeenth century, logic was not treated in exclusively formal terms, but also dealt with epistemology and psychology of knowledge issues. The part played by Descartes towards the shaping of this discipline, has long been acknowledged. However, the exact features of his contribution to the logic of his time still have to be disentangled. Such is the purpose of this paper. Progress in scholarship has recently shown that Descartes' harsh words about the syllogism were not to be interpreted in terms of a rejection of formal logic issues. It has also revealed the impact of Descartes' theory of ideas on the logics that were written from the second half of the 17th century on. This presentation intends to go one step further, with an attempt at reconstructing what Descartes did with logic. Accordingly, it focuses on a letter to Regius on May 24th 1640, where Descartes developed the terms of his logic. In this letter, he named 'axioms' or 'premises' or 'principles' the propositions a deduction derives from. He called 'conclusions' the propositions a deduction leads to. He identified the reasons why we form judgments with the principles from which we build deductions. A consideration of Descartes' understanding of these elements of reasoning will illuminate the philosophical role he attributes to logic, as providing the tools for the building of philosophical discourse.

Pause déjeuner / Lunch Break

14:30-15:30 VINCENZO DE RISI (CNRS, Laboratoire SPHère & Max-Planck-Institut für Wissenschaftsgeschichte)

The Provability of Axioms: Birth and downfall of a Scholastic theory

One of the major problems in the history of epistemology is to provide an explanation for the lack of alternative axiomatic systems in mathematics before the 19th century. The cause of this absence can apparently be found in an important Scholastic theory of the provability of axioms from the definitions of the terms employed in them. The talk reconstructs the sources and history of that Scholastic theory, which, conceived in commentaries on Aristotle in the 13th century, enjoyed an extraordinary popularity during early modernity and the 17th century in particular, and was endorsed by philosophers, mathematicians and scientists throughout Europe. This theory had important consequences regarding the nature and function of axioms in all sciences, and in mathematics in particular. The talk concludes by showing how that theory disappeared during the 18th century and was replaced with a new epistemology that led, among other things, to the discovery of non-Euclidean geometries.

Pause / Break

15:45-16:45 ARNAUD PELLETIER (Université Libre de Bruxelles)

On Leibniz's First Principles

Leibniz constantly asserts the necessity to demonstrate the axioms assumed by Euclid and to reduce them, through a series of distinct definitions, to the only genuine axioms, namely the identical propositions. In this sense, axioms are no exception among the principles at the foundation of the sciences that Leibniz lists in various inventories: definitions, hypotheses, phenomena, *initia, fundamenta, praecognita*. Beyond these, Leibniz introduces a distinction between those principles and some genuine *first* principles that would be truly unprovable, while nevertheless supporting knowledge. There are therefore no axioms (which can provisionally serve as first principles of a doctrine) without genuine first principles: more than their status and function, the way to grasp and acknowledge them must be distinguished from that of the axioms. This paper outlines some elements of the distinction between axioms and first principles.

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