Institut d'Histoire et de Philosophie des Sciences et des Techniques UMR 8590

13, rue du Four
75006 PARIS, FRANCE
https://www.ihpst.cnrs.fr

Sciences, Normes, Démocratie UMR 8011

17, rue de la Sorbonne, Bureau G071
75231 PARIS CEDEX 05, FRANCE
https://snd.sorbonne-universite.fr

P H I L M A T H S E M I N A R

Research seminar in the philosophy of mathematics and the philosophy of logic

Organizers: Fabrice Pataut (SND) and Francesca Poggiolesi (IHPST)

2nd SEMESTER 2023-2024 PROGRAM
IHPST – salle de conférences (2ème étage)
13, rue du Four, 75006 Paris

Monday January 29: 5pm-7pm

Paola Cantù
(Philosophy, CNRS, UMR 7304, Centre Gilles Gaston Granger)

PRACTICAL RATIONALITY AND STRUCTURALISM : PEANO'S REMARKS ON THE PRINCIPLE OF PERMANENCE

Zoom link
https://pantheonsorbonne.zoom.us/j/99232080476?pwd=SlFla0hZNWFtd1d3NTU0WGpUSDc4UT09

Meeting ID: 992 3208 0476
Passcode: 353195

ABSTRACT

The paper investigates the principle of permanence in the Peano School, suggesting a reading that differs from the one usually found in contemporary literature, where (1) it is usually associated to logical consistency as a criterion for the creation (rather than presentation) of new theories, and in particular for the extension of theories ; (2) It is investigated as a metatheoretical criterion related to questions of conservativity and is often couched in proof-theoretic jargon, emphasizing deduction. The paper will analyse the principle of permanence with respect to linguistic issues, to specific mathematical examples it can be applied to and in relation to structuralism.

The principle of permanence, as analysed in the works by Peano, is a principle of practice and a principle of economy. It is a principle of practice because what one preserves and the notation that one adopts to highlight it, might depend on the context, just as the choice of definitions cannot be made based on purely logical virtues, but involves also practical issues (Peano discusses the principle of permanence in the context of the analysis of definitions). The principle of permanence is a principle of economy, because it exhibits the structural features of a theory: an algebraic presentation of the theory of groups allows one to present the main features of several systems that are groups and whose difference can be easily perceived by specifying some further properties that pertain to a given group and not to groups in general.

Tuesday January 30: 11am-1pm

Zoé McConaughey
(Philosophy, Université de Lille)
and
Anna Maria Mora Marquez
(Philosophy, Göterborgs Universitet)

WHAT IS FORMAL IN ARISTOTLE'S SYLLOGICTIC ?

Zoom link
https://pantheonsorbonne.zoom.us/j/96283852558?pwd=S2gvM0tUZmVVVmNlRk1kQTFhaStNUT09

Meeting ID: 962 8385 2558
Passcode: 221265

ABSTRACT

In the fourth century BCE, Aristotle invented "syllogistic", a logic he developed in his *Prior Analytics*, especially in the first seven chapters of the first book. With his syllogistic, Aristotle is often credited as the father of Western formal logic. Two issues immediately arise: first, since logicians have recently pointed out various senses of "formal" in modern logic, which of these meanings, if any, do we recognize in Aristotle's syllogistic when we call him the founder of modern formal logic? Second, would Aristotle himself have shared such a conception of formality? The first issue requires that we explicit the concepts used in modern formal logic, and how they are used to describe segments of the history of logic – here, Aristotle's logic – from a "modern point of view". The second issue takes as its object this "modern point of view" for describing or studying an ancient logic and looks at its historical groundings: do the modern concepts describe what Aristotle did (or tried to do), or do they rather cover (or distort) his project? These two issues are linked; together, they question the relation modern logic has with the history of logic – whether it is only a backwards understanding of the history of logic from a modern perspective or a back-and-forth understanding in which studying the history of logic enriches the modern conception of logic.

Our paper deals with these two issues regarding formality in Aristotle's syllogistic, and argues that a historically sensitive approach to Aristotle's logical project sheds light on our modern concept of formality. Such an approach thus enriches modern logic by better understanding its history. The first issue – in which of the senses of "formal" is Aristotle's logic considered formal? – stems from two recent attempts at providing a taxonomy of the various senses "formal" is used in modern logic: MacFarlane (2000) and Dutilh Novaes (2011). The second issue builds on the first: provided that we have identified one or more senses of formal (first issue), would Aristotle himself (second issue) have shared such a conception of formality, and would he have considered his own syllogistic as a "formal" enterprise in that very same sense or senses? Uncritically introducing modern logical concepts can mask distinctions Aristotle did make. This kind of doubt is further nourished by approaches to Aristotle's logic that adopt a unitary conception of modern logic. The presupposition of "a single discipline of formal logic" is at the core of attempts to study ancient logics "from a modern point of view": if there is a single discipline that goes from Aristotle to us, then we can use our conception of logic to understand Aristotle's conception of logic. The problem is that modern formal logic has now developed in such a variety of ways that it is difficult to speak, today, of "a single discipline of formal logic".

The presupposition at the core of studies of Aristotle's syllogistic "from a modern point of view" tends to take a certain conception of logic for granted, and uncritically applies this conception to Aristotle. Pointing out the plurality of logics and logical frameworks that have been developed in the past century is thus a way to stress the need to ask what Aristotle himself was trying to do when developing his syllogistic in the fourth century BCE.

Our main contention in this paper is that Aristotle's logic should not be understood only "from a modern point of view"; it should be approached from Aristotle's aims in developing his own project, aims which can be gathered from a close study of his texts in their context. From such an approach, we will argue for a pragmatic understanding of syllogistic. This paper explores the above two problems regarding what is formal in Aristotle's logic and their connection: what we now recognize as formal (first issue), what Aristotle would have accepted as a characterization of his syllogistic enterprise (second issue), and how these two can be reconciled. First, the two recent taxonomies regarding the various senses of "formal" are presented. Then we ask whether these senses apply to Aristotle's syllogistic, and whether other senses have been proposed while describing Aristotle's enterprise. Finally, we propose a different approach to the problem: it is not just the result that should be examined with our modern logical concepts, but the goal Aristotle himself had, the intention behind his logical enterprise. This approach will give us a key for understanding Aristotle's logic on the one hand, and the notion of formality embedded in his logic on the other.