

Bolsa de mestrado: “Reasons for and against arbitrary objects”

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Abstract

Since antiquity philosophers raised questions about the objects of a mathematical theory: is there any such object? what is the nature of such objects? is there a difference between natural objects and mathematical ones? are mathematical objects able to ground the certainty of mathematics?

Plato was the first to propose that mathematics is about universals. Indeed, platonic ideas represent the first interesting historical example of objects with a character of arbitrariness: objects able to represent the essence of concrete objects of which they are abstraction. Moreover, the story of arbitrary objects, already at the time of Plato and Aristotle, is deeply intertwined with that of logic, because of the universal character of the latter (i.e. the possibility of its application in any field of knowledge). Consequently the study of arbitrary objects follows the evolution of logic along its history.

In this research we plan to trace a general history of arbitrary objects making explicit the arguments that philosophers gave in favour or against arbitrary objects and confronting them with the main themes of the modern development of logic.

Description of aims

The aim of this grant is to give to a students the conceptual and technical tools necessary to successfully conclude a master in logic at the philosophy department of Unicamp and to be able to start in the best condition a PhD thesis on more advanced themes of philosophical logic.

The structure of the proposed research aims at developing a critical thinking about the subject of arbitrary objects. Indeed, in making a catalog of reasons in favour and against arbitrary object, the aim consists in developing the ap-

appropriate philosophical taste able to distinguish the subtleties of a philosophical argumentation.

Parallel to the philosophical inquiry the aim is to develop a sufficiently deep understanding of logic, able to allow to understand the formal application of the arguments isolated in the more philosophical part of this project. To this aim the courses offered will be able to cover all basic areas of mathematical logic. Specifically the philosophical analysis proposed will be put to use to offer a better understanding of the theoretical motivation of the introduction and elimination rules of quantifiers in first order logic.

Timetable with methodology and expected results

The two years of this grant will be divided along an historical axe of research. The first year will be devoted to the study the reasons for and against arbitrary objects from the antiquities to Frege. In particular it will be provided a confrontation of the ideas of the most influential proponents – Plato ([Fine, 2003]), Locke ([Locke, 11975]) and Meinong ([Meinong, 1915]) – against the most fierce opponents – Berkeley ([Berkeley, 1901]) and Frege ([Frege, 1950]).

The second year will be devoted to an attentive analysis of the modern logical discussion on arbitrary sets, analysing the works of Fine ([Fine, 1983]) and Martino ([Martino, 2001]).

Besides the study of the above authors the candidate will attend the course offered at the philosophy department of Unicamp on more technical subjects; in order to develop a philosophical and logical competence at the same time. For what concerns methodology the analysis of texts will be the preferred one, on the philosophical side.

The result of this master grant will be the writing of a master thesis, bearing the title of the project, from which it is planned to extract at least an article summarising the results of the analysis proposed: a repository of philosophical arguments in favour and against arbitrary objects. A perfect journal for the publication of this work could be the journal *Manuscrito*.

Justification of the plan

The justification for this grant and for the detailed explanation of its realization is twofold. On the one hand, while being a work of understanding more than of creation, the outcome of this research aims to fill in a gap in the philosophical community: the production of a catalog of philosophical arguments on an important and transversal subject at the intersection between philosophy of mathematics and logic. On the other hand, it will offer a mapping of the lit-

erature that are at the foundation of the Jovem Pesquisador project that I am proposing. Therefore the outcome of this work will provide useful bibliographical information for the development of the project *Arbitrariness and genericity. Or on how to speak of the unspeakable*.

References

- G. Berkeley. *The Works of George Berkeley*. Oxford: Clarendon Press, 1901.
- G. Fine. *Plato on Knowledge and Forms: Selected Essays*. Oxford University Press, 2003.
- K. Fine. A defense of arbitrary objects. *Proceedings of the Aristotelian Society, Supplementary Volumes*, 57:55–77, 1983.
- G. Frege. *The Foundations of Arithmetic: A Logico-Mathematical Enquiry into the Concept of Numbers*. Blackwell, 1950.
- J. Locke. *An essay concerning human understanding*. Oxford University Press, 11975.
- E. Martino. Arbitrary reference in mathematical reasoning. *Topoi*, 20:65–77, 2001.
- A. Meinong. *Über Möglichkeit und Wahrscheinlichkeit. Beiträge zur Gegenstandstheorie und Erkenntnistheorie [On Possibility and Probability. Contributions to Object Theory and Epistemology]*. Leipzig: J. A. Barth, 1915.