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La philosophie des sciences et spécialement sur la logique, les mathématiques et la théorie de l’argumentation. Derniers ouvrages parus

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ITALIAN EPISTEMOLOGY AT THE END OF THE XIXth CENTURY

selected writings of giovanni vailati

Giovanni Vailati (1863-1911), mathematician appreciated and linguist, is one of the major figures in the history of Italian epistemology. The present volume contains selected writings of a great Italian intellectual, who liaised science, philosophy and politics. A new kind of sciences and philosophy, philosophy of technical language, and the role of scientific method and justification. Vailati's broad correspondence with major scholars in different fields and the development of an original form of pragmatism should be taken into account in order to understand the concept of knowledge that underpins his interdisciplinary approach. As an example of this approach, I consider the case of definitions, which was analysed from several different perspectives by Peano and the Turin scholars at the International Conference for Psychology Vailati related the classification of mental states to the distinction between definitions and judgements of value. In a few other works Giovanni Vailati further developed the analysis of definitions not only from the perspective of mathematics, logic, philosophy and psychology, but also from the point of view of history of sciences, history of philosophy, pragmatic education theories, and linguistics. The interdisciplinary approach developed by Giovanni Vailati and the Turin group, which amounted to a research practice rather than a fully explicit didactic theory, can be interestingly compared with a brand new French education project (Licence Sciences et Humanités) developed by a group of teachers and researchers of the Aix-Marseille University. The new course in Science and Humanities starting in 2012 abandons the disciplinary organisation of the curriculum, which became widespread in European countries at the end of the xixth century as a result of Positivism, Napoleon inheritance and Prussian education models. The curriculum is organized around five major themes: 1) nature and culture, 2) logic, language and calculus, 3) world systems, 4) optical, vision and colors, involved disciplines are linguistics, infor- matics, biology, philosophy, history, neurosciences, physics and mathematics. The common epistemological perspective concerns the constitution and transmission of knowledge, examined at three stages of human history: the birth of Greek science, the modern scientific revolution, and the scientific turn developed between the end of the xixth and the beginning of the xxth century. My interest in comparing this project and Vailati's research practice is epistemological rather than sociological or educational: I am at verifying whether there is a connection between the interdisciplinary approach to fundamental scientific problems, and an epistemological conception of what knowledge is or should be. To answer this question, one has to understand what is played by philosophy, history, and mathematics in the desired unification of sciences. Vailati's interdisciplinary approach corresponded made him into an European "intellectual": does the new educative project aim at forming a new class of intel- lectuals that might unify theory and practice, social and life sciences, art and technology? A question that has been raised at the time of Vailati is often raised nowadays too: is the move- ment towards the unification of knowledge less than the sociological barriers created by hyper-spe- cialization, the result of a nostalgic attitude towards the past, or is it capable of promoting inno- vative and original research? The latter was surely the case in the Italian context at the beginning of the xxth century. Before Gentile's reform introduced a rigid divi- sion between the two cultures.

References


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At the beginning of the xxth century the high rate of analphabet- ism and the recent unification of the country, achieved only in 1870, had required a vast pro- gram of school and university reforms which were accompa- nied by various ethical and moral mental questions: whether the university should depend on public funds or become auto- nomous, and whether the curri- culum should be specialized or remain general as in the modern era. The 1859 Casati reform had separated the faculty for litera- ture and philosophy from the faculty for mathematical, phys- ical and natural sciences, thus introducing for the first time specialized curricula. The huge debate on the 1882 Baccellari's reform, aiming at reintro- ducing a unique faculty, involved political, scientific and financial issues, and arose the question of the relations between State centralism and local universities, both on an administrative and a didactic level. Under the influence of positivism, many mathematicians appreciated the specialization introduced by Casati but suggested to rein- troduce a bridge between the two cultures activating courses in philosophy or history of sciences in all faculties. The ten- sion between a specialized and an interdisciplinary approach to knowledge was not limited to the discussion on the didac- tic reform of universities (and schools) but emerged in scientific research too.

The group of mathematicians who studied or worked in Turin under the supervision of Giu- seppe Peano between the end of the xixth century and the beginning of the xxth century is an interesting case study in this respect: on the one hand, they were highly specialized in logic and the foundation of mathe- matics, on the other hand they had multidisciplinary interests in linguistic, psychology, history of sciences and philosophy, philo- sophy and politics. A new kind of scientific collaboration was set up in the edition of the Forme Elementarle, a dictionary of mathema- tics that aimed at giving an axio- matic presentation of different mathematical theories by introducing a unique symbolism and a universal language (latino sine flexione), and that evolved over the years in a rich correspondence sent by the editors in chief and by the readers them- selves. In particular, one of the mathematicians of the group, Giovanni Vailati (1863-1911), applied a truly interdisciplinary approach to the research into several fundamental epistemolog- ical questions, including the nature of definitions, the role of technical language, and the properties of scientific method and justification. Vailati's broad correspondence with major scholars in different fields and the development of an original form of pragmatism should be taken into account in order to understand the concept of knowledge that underpins his interdisciplinary approach. As an example of this approach, I consider the case of definitions, which was analysed from several different perspectives by Peano and the Turin scholars at the three International Confe- rences that took place in Paris in 1900 and that impressed the young Bertrand Russell, who was to declare that the meeting with Peano was “a turning point in his intellectual life”. At the International Conference for Philosophy, Giuseppe Peano investigated the conventional nature of definitions and the notion of primitive concepts in mathematics, Burali-Forti ana- lyzed the differences between several kinds of definitions used in science (by abstraction, by postulates, nominal), Alessandro Padoa introduced a logical cri- terion for definability, Giovanni Vailati discussed the problems concerning the definition, demarcation and classification of sciences. At the International Conference for Mathematics, Alessandro Padoa defined the nature of natural numbers and the principles of geometry. At the International Conference for Psychology Vailati rela- ted the classification of mental states to the distinction between definitions and judgements of value. In a few other works Giovanni Vailati further developed the analysis of definitions not only from the perspective of mathematics, logic, philosophy and psychology, but also from the point of view of history of sciences, history of philosophy, pragmatic education theories, and linguistics. The interdisciplinary approach developed by Giovanni Vailati and the Turin group, which amounted to a research prac- tice rather than a fully explicit didactic theory, can be interestingly compared with a brand new French education project (Licence Sciences et Humanités) developed by a group of teachers and researchers of the Aix-Mar- seille University. The new course in Science and Humanities