

History of Science

A. Rossi¹

¹Dipartimento di Fisica, Università del Salento, Italy

The research mainly focused on the historical and foundational side of Italian physics in the last century and it was also developed in collaboration with national and international research institutions (Dipartimento di Fisica, Roma Sapienza, Dipartimento di Scienze della persona, Bergamo, Max Planck Institut fuer Wissenschaftsgeschichte, Berlino, Seminario di Storia della Scienza Univ. di Bari, Centro Interuniv. Fondamenti e Filosofia della Fisica di Cesena). In particular, the research concerned the following subjects.

Alongside the recovery of Italy place in physics in the XXth Century (mainly due to Enrico Fermi Group in Rome [1] and to Bruno Rossi Group in Florence), there was in Italy too as abroad a consistent development of specific reflections, strongly theoretical and foundational in character, due to independent personalities endowed with both physical talent and competence and philosophical deepness. In particular, among the most relevant of them there were Ettore Majorana and Giovanni Gentile jr., son of the important idealist philosopher G. Gentile sr. Though they were rather linked to the Fermi Group, they also had critical attitudes towards them, as they were interested not only in physics in general but also in its links with other sciences and philosophy. Those interests are demonstrated by several foundational and theoretical writings, both of Gentile jr. (including his very important contribution to quantum statistics with a proposal of intermediate statistics or parastatistics, called from him Gentilian statistics), and Majorana's great anticipating theoretical writings on quantum field theory, from one side, and his methodological and foundational reflections on the role of statistics in both physical and social sciences, from the other side. On this subject Majorana wrote an important article which was published, after his disappearance, by his great friend Gentile jr. in a collection of essays of Gentile himself, to testify to the great friendship and community of ideas and interests between the two physicists.

Another autonomous personality of physicist, though great friend of Enrico Fermi, was Enrico Persico [2]. He was much more interested than Fermi in methodological and foundational themes, such as the foundation of quantum mechanics (with a particular attention paid to wave

mechanics) and the problem of causality in classical and quantum physics (on which he edited a volume of Planck's essays in Italian translation). Persico was also a great teacher who formed generations of physicists, in Florence, in Canada at Laval University, in Turin and in Rome, just for the importance he gave to the foundational side of physics, in order to avoid errors and ambiguities through accurate reflections on concepts and theories. Yet Persico, whose activity went on until 1969, was also able to join together theoretical and operative attitudes as a director of the theoretical section of accelerator physics at the National Laboratories of CNEN (National Committee for Nuclear Energy) in Frascati, near Rome and its State University, to elaborate projects and implementation of a national 1,1 GeV electrosynchrotron. So he demonstrated the great fecundity of ideas and foundational reflections even at most applicative and experimental levels. After leaving the Laboratories at the end of the enterprise, Persico went on teaching theoretical physics of accelerators and reactors, so showing the utility of theoretical and foundational reflections not only to build machines but also to make them work.

REFERENCES

1. Rossi A. e Buttaro C., "Franco Rasetti: little Science versus Big Science". Atti del XXVII Congresso Nazionale di Storia della Fisica e dell'Astronomia, Bergamo 2007, in press.
2. Rossi A. e Buttaro C., "Enrico Persico e il versante fondazionalista della fisica italiana nel '900". Atti del XXVIII Congresso Nazionale di Storia della Fisica e dell'Astronomia, Bergamo 2008, in press.
3. Rossi A., "Il processo a Galileo: una questione ancora aperta?", *Nuova Civiltà delle Macchine*, **XXVI** (2008) 2.
4. Rossi A., "Galileo: un processo senza fine?", *Physis. Rivista Internazionale di Storia della Scienza* (2008) in press.
5. Rossi A., "Max Planck: la continuità fisica e il quanto di azione", *Physis. Rivista Internazionale di Storia della Scienza* (2008) in press.
6. Rossi A., "Origini storiche e significato dell'analisi funzionale", *Il Veltro. Rivista della Civiltà Italiana* (2008) in press.

7. Rossi A., “Musei scientifici”, *Nuova Civiltà delle Macchine* (2008) in press.
8. Rossi A., “Portata e limiti della filosofia della natura di fronte alla fisica: passato e presente”, *Giornale di Fisica della Società Italiana di Fisica L* (2009) supplement in press.
9. Rossi A., “Il mutamento dell’immagine ideologica di Einstein in Italia durante il fascismo”, in Minazzi F. *et al.*, *Sulla Filosofia Italiana del Novecento* (Milano, Franco Angeli, 2008).
10. Rossi A., “Science and common sense: the relativistic turn”, Proceedings of the international conference on Albert Einstein and Hermann Weyl, Maglie (2008) in press.
11. Rossi A., “L’eredità del pensiero di Thom”, in Thom R. *et al.*, *René Thom: prevedere non è spiegare* (Lecce, Università del Salento, 2008).
12. Rossi A., “Giordano Bruno and the new order of nature between Copernicus and Galilei”, in Elkana Y. *et al.*, *Turning Traditions Upside Down. Rethinking Giordano Bruno’s Enlightenment* (Berlin, Max-Planck-Institut- fuer Wissenschaftsgeschichte, 2008) in press.
13. Rossi A., recensione di L. Dibattista, “Gli spaghetti di Mendel” (Cacucci Editore, Bari, 2008), *Physis. Rivista Internazionale di Storia della Scienza*, in press.
14. Rossi A., “L’evoluzione della fisica”, in Ria D. *et al.*, *La Cultura Scientifica del Nostro Tempo* (Barbieri-Selvaggi, Manduria, 2009).