



LUCIO RUSSO

Lucio Russo was born in Venice on November 22, 1944 and he is currently Professor of “Theory of Probability” at the University of Rome “Tor Vergata”. He is the typical product of a highly effective educative system, even if the exceptional vitality of his thought would have undoubtedly manifested itself also in different contingent situations.

The unified vision of culture, science and its technological applications, demonstrated by Lucio Russo in all his activities, has been facilitated by the rigorous and stimulating education which was imparted to him by his teachers of the “Liceo G.B. Vico” in Naples where he carried out his excellent high school studies, and by the profound influence which was exerted on him by his father, professor of mathematics and physics and, finally, dean of high school institutes.

Lucio Russo is a sagacious theoretical physicist, an excellent mathematician, an innovator of the modern theories of statistical mechanics, a deep connoisseur of the theory of probability and of Hellenistic mathematics and science. The great versatility of his intelligence is proven by the fact that he taught, in Naples, Mathematical Models for Physics, Physics, Statistical Mechanics; in Modena, Calculus of Probability, Mathematical Physics, Advanced Mechanics, Numerical Calculus; in Princeton, Partial Differential Equations; in Rome “Tor Vergata”, Calculus of Probability, Rational Mechanics, Mathematical Physics, Advanced Calculus, History of Mathematics, History of Science.

In the first part of his scientific career Lucio Russo made great contributions to the theory of probability and to statistical mechanics. His best intuition was recognizing the importance and the role of the concept of percolation in the analysis of complex systems. Due to this completely original viewpoint, he was able to establish the essential elements necessary to prove the conjecture on the non-existence of equilibrium states which are translation-invariant in the two-dimensional Ising model. Equally innovative is his very lucid analysis of the 0-1 law: he introduced an approximate version of this law, thus establishing a crucial turning point in the development of the theory of probability.



Very original is also the idea of applying new image reconstruction methods and automatic shape recognition to the realization of an automatic classification system of fingerprints. These methods are based on the description of fingerprints distribution according to a Gibbs distribution related to a Hamiltonian.

Lucio Russo also gave relevant attention to the theme of education. This attention resulted in the writing of the essay “Segmenti e Bastoncini” which expresses severe criticism on the current state of education in Italy. Even more important are the contributions Lucio Russo made during the subsequent period of his activity, when he began to study the history of the foundations of mathematical and physical sciences.

Lucio Russo can therefore be defined as a man with an eclectic and profound essence: he has rediscovered the true nature of the Euclid texts, the real signification of ancient texts of mechanics and of the antique theories of tides dating from the Hellenic period. Lucio Russo is also an expert on the works of Archimedes and of all his epigones. He linked his name to a bold but very well grounded interpretation of the history of scientific thought, which is ably presented in his book “The Forgotten Revolution”. Lucio Russo’s position on the history of science, even if initially controversial, has been almost unanimously accepted by all the experts, to the point that “The Forgotten Revolution” has been translated into the most important foreign languages and has also enjoyed unexpected success with the general public.

This success has been so unexpected because Lucio Russo does not hide the epistemological, physical, biological and chemical concepts (typical of the exact sciences) behind simplifications which can in some way obscure their true significance. This essay of Lucio Russo is a serious, sometimes difficult, work: the reader is asked to be able to evaluate the validity of the conjectural reconstructions made by the author who never uses the principle of authority.

Nevertheless, due to the exceptional pedagogical ability of the author, this “difficult” essay has been appreciated by tens of thousands of readers: an overwhelming success, considering that very few essays on mathematics sell more than few thousand copies. In “The Forgotten Revolution” the author shows his research in the field of the History of Science: this research allowed for the reconstruction of: some ideas on the astronomy of Hipparchus by means of testimonies contained in some literary works; the proof of heliocentricity attributed from Plutarch to Seleucus of Seleucia; some problems of Euclidean philology (especially on the definitions of the first book of



Euclid's Elements and on the first postulate of Optics); the history of the theory of tides in the Hellenistic period and in the first modern age.

The thesis proposed by Lucio Russo is clear: the exact science was born in the Hellenistic period and produced an exceptional technological and economic development in that period. When Rome kills Archimedes and disperses the class of Hellenistic intellectual science suddenly dies and technology begins its agony. This long agony of technology lets the Roman political system develop for a while, but when the Hellenistic technology and scientific knowledge die, the economic system of the Roman Empire collapses together with its magnificent political institutions. The Italian peoples of the Renaissance rediscover the ancient Hellenistic science only with the diffusion of the Greek books stolen from the libraries of Constantinople.

This thesis, impacting strongly in several domains such as the organization of the educational system, is developed by the author with scientific and erudite precision. Lucio Russo uses in his works of History of Science, the same rigorous method which characterizes his researches on Probability Theory and Statistical Mechanics.

For all reported reasons the committee, entrusted by the
“Fondazione Levi-Civita”

with the responsibility of awarding the
“PREMIO INTERNAZIONALE LEVI-CIVITA” (International Levi-Civita Prize),

unanimously propose Professor Lucio Russo as the winner of the
2010 edition.