

Logical and Philosophical Aspects of Measurement

L. Finkelstein,

Measurement and Instrumentation Centre, City University, Northampton Square,
London EC1V 0HB, UK. Tel: +44 (0)20 7040 8139, Fax: (0)20 7040 8568, e-mail :
l.finkelstein@city.ac.uk

R. Z. Morawski, Warsaw University of Technology, Faculty of Electronics and
Information Technology, Institute of Radioelectronics, ul. Nowowiejska 15/19, 00-
665 Warszawa, Poland

Tel: + 48 (22) 660-7721, Fax: + 48 (22) 825-5248, e-mail:

r.morawski@ire.pw.edu.pl

L. Mari

Università Cattaneo – LIUC, Castellanza (Va), Italy, Cso Matteotti, 22 – 21053
Castellanza (VA), Italy

Tel. +39 0331 5721 – lmari@liuc.it

The logical and philosophical aspects of measurement are of continuing interest to those engaged in the study, advancement and application of Measurement Science. The present special issue of this journal is devoted to the topic.

The issue consists of papers based on presentations made at the IMEKO TC7 10th Symposium on Advances of Measurement Science, held in St. Petersburg, Russia, between June 30 and July 02 2004. The papers have been revised and updated to take into account, in particular, the proceedings of the Symposium and the lively discussions of the topic that have been held on that occasion. The issue is edited by the above named.

The proceedings of the Symposium examined new challenges to the accepted views of measurement.

The dominant paradigm for the process of measurement has been that of measurement in the physical sciences, and was philosophically rooted in the approaches of logical positivism and operationalism. The important representational theory of measurement is based on this standpoint. This paradigm has always presented difficulties in the application of measurement outside the physical sciences. Some trends in modern philosophy also challenge the validity of the basis of traditional approaches of measurement theory.

The proceedings of the Symposium examined the different perspectives on measurement employed in different sciences. They also took into account

modern challenges to the concepts of objectivity, and to the privileged status of certain scientific methodologies.

These strands of the Symposium proceedings are represented in the papers in the papers published in this issue.

The logical and philosophical concepts of measurement have been termed the foundations of measurement. In his paper in the present issue Luca Mari debates that term critically in the light of modern philosophical trends.

Ludwik Finkelstein extends the concepts of measurement in the wide sense to the consideration of problems of measurement in soft systems. His paper draws attention to problematic aspects of measurement in economics, sociology and psychology.

One of the important aspects of the St. Petersburg Symposium has been to introduce into the discussions of measurement by scientists and engineers working in the field of measurement and instrumentation science and technology of new perspectives from the disciplines of economics and psychology. The paper by Marcel Boumans on measurement in economic systems provides an incisive review of the problems. Joel Michell provides an overview of the logic of measurement from a realist perspective as seen by a psychologist.

Hiroshi Watanabe provides in this issue a study of coarse-grained information a subject of considerable theoretical interest.

Finally Thomas Allevard, Eric Benoit, and Laurent Foulloy present in this issue further advances of their work on fuzzy nominal scales.

The editors of the issue wish to thank Prof. Sergey V. Muravyov for his inspirational work on the St. Petersburg Symposium, which made this issue possible. They also wish to thank all colleagues who took part in the debates on the topic of this issue at the Symposium. They greatly influenced the subject.