

Review of Enrico Bellone, A World on Paper: Studies on the Second Scientific Revolution, translated by Mirella and Riccardo Giacconi (Cambridge: The MIT Press, 1980)

By: Kenneth Caneva

Kenneth Caneva. Review of Enrico Bellone, A World on Paper: Studies on the Second Scientific Revolution, translated by Mirella and Riccardo Giacconi (Cambridge: The MIT Press, 1980), in *Physics Today*, Vol. 37, No. 1, January 1984, pp. 89-90. doi.org/10.1063/1.2916058

Made available courtesy of American Institute of Physics: <http://www.physicstoday.org/>

*****Reprinted with permission. No further reproduction is authorized without written permission from the American Institute of Physics. This version of the document is not the version of record. Figures and/or pictures may be missing from this format of the document.*****

seem to be present in the usual abundance for a typescript. Some are typographical, and some appear to be a matter of translation. Most are readily apparent to an expert but could be confusing to a novice.

The only books remotely similar to this one that come to mind are two that deal more fully with the mechanics of electron transfer processes, but otherwise do not cover the wide range of material in Davydov's book. They are *Charge Transfer Processes in Condensed Media* by Jens Ulstrup (Springer-Verlag, 1979) and my forthcoming book *Quantum Mechanical Tunneling in Biological Systems* (Cambridge University Press), which is a revision of a paper of the same name published in *Quarterly Reviews of Biophysics* 13, 387 (1980).

DON DEVAULT
University of Illinois
Urbana-Champaign

A World on Paper: Studies on the Second Scientific Revolution

E. Bellone
220 pp. MIT Press, Cambridge, Mass., 1980.
\$14.95

Enrico Bellone's book, first published in Italian in 1976, examines "the transition from classical mechanics to the modern view of the physical world." Predominantly a 19th-century development, this "second scientific revolution" runs, in Bellone's chronology, from 1687 (Issac Newton) to 1913 (Niels Bohr) and, in fact, still continues. The author intends his story to vindicate the autonomy of science (and the history of science) against the supposed claims of unnamed philosophers to reduce it to some predetermined scheme. Bellone repeatedly attacks the view that physics in the 18th and 19th centuries was guided by scientists' attachment to "mechanism" (involving both a materialist ontology and a particular methodology) and that "the roots of contemporary physics... lie in a philosophical verdict against mechanism itself and in a deep-seated crisis of physics, which verdict and which crisis occurred in a relatively short period of time around the turn of the century."

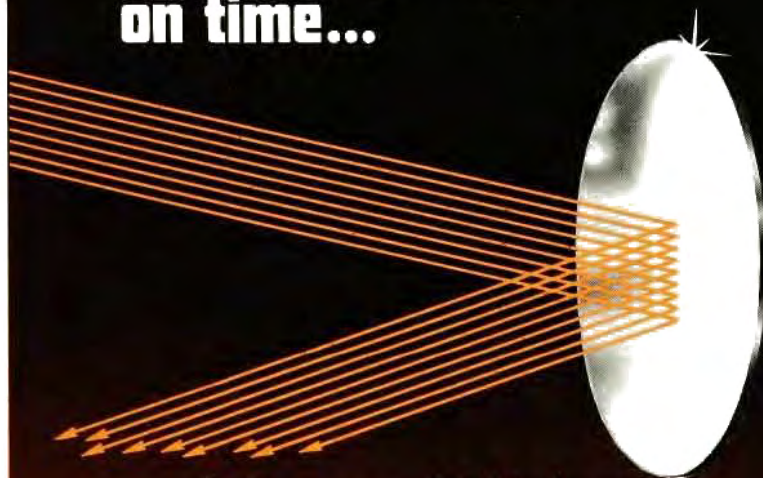
The book's tenor is critical, or rather polemical, since Bellone consistently refuses to engage seriously the simplistic views he opposes or even to name their authors. Equally frustrating is his failure to define the essential characteristics of the classical mechanics or modern physics whose evolution he wishes to describe. Nor does he tell us how to distinguish "physicists" from "philosophers"—as his thesis of the irrelevance of philosophical criticism to the development of modern physics

requires—in a group that includes Ludwig Boltzmann, Albert Einstein, Ernst Mach, Max Planck and Henri Poincaré. Bellone's overriding desire to explode the consistently unattributed notion that physicists' attachment to a monolithic "mechanism" guided the development of 19th-century physics leads him to deny the label "mechanist" even to Boltzmann and Lord Kelvin, in which case the word simply loses all meaning.

Bellone's concept of a scientist's "dictionary"—the interconnected set of

theories, ideas, assumptions, techniques, and the like that the scientist entertains—may not be as original as he and Stillman Drake (who provided a foreword) would have us believe, but it is surely useful. Bellone quite correctly insists that scientists choose different strategies from an evolving "dictionary" as they try to come to terms with specific problems. Unfortunately, his polemical preoccupation has apparently deflected his attention from what he elsewhere recognizes are the crucial

You'll get your sputtering target on time...



Or pay 10% less

Prompt Delivery

If we fail to ship a stocked sputtering target within 48 hours, or a custom target as promised (generally 2 to 4 weeks), we will reduce your invoice 10%.

Of course we don't think that will happen. We have the specialized equipment and large inventory needed to deliver sputtering targets fast — any size, any shape, any material.



Sputtering targets custom-made to your specifications.

Certificate of Analysis Assures Purity

We check the purity of each production lot of powder by X-ray analysis and spectrographic analysis. Then we record the results of these and other quality control checks on our "Certificate of Analysis" and include it, free of charge, with every shipment. This is your assurance of consistently high quality from CERAC.

Let us send you our free Sputtering Target Brochure and complete Price List. Simply write, phone or telex CERAC.

CERAC incorporated

P.O. Box 1178, Milwaukee, WI 53201 • Phone: (414) 289-9800 • Telex: 269452 (CERMIL)

Circle number 38 on Reader Service Card

APS show

at the March General Meeting
of the American Physical Society

Detroit Plaza

March 27-29, 1984

The largest APS Meeting of the year; **2000** papers. Invited paper sessions on • Biological • Chemical • Condensed Matter • Electron and Atomic • High Polymer Physics

Hardware categories figuring prominently include:

Tuneable laser/
components

Cryogenics/vacuum
Data Acquisition

Spectrometry
(Optical, NMR
Mössbauer, UV,
X-Ray, Neutron, etc.)

EXHIBITORS

(as of 11/1/83)

Air Products & Chemicals
American Magnetics
Amplifier Research
Blake Industries
Canberra Industries
Coherent
Cryofab
Cryosystems
CTI Cryogenics
CVI, Inc.
Datametrics Dresser
EG & G PARC
HPS Corporation
IBM Instruments
Instruments, SA
International Cryogenics
Ithaco
Janis Research
Keithley Instruments
Lake Shore Cryotronics
Kurt J. Lesker
Matec, Inc.
MDC Manufacturing
Mech-tronics Nuclear
Microscience

Minnesota Valley Eng.
MKS Instruments
MMR Technologies
Moxon Electronics
Newport Corporation
Nicolet Instruments
Nuclear Data, Inc.
Oriol Corp.
Oxford Instruments N.A.
P.E. Physical Electronics
P.E. Vacuum Products
Precision Cryogenic System
S.H.E.
L.M. Simard
South Bay Technologies
Spectra-Physics
Spex Industries
Tracor Northern

PUBLISHERS:

Academic Press
American Institute of Physics
Cambridge University Press
Elsevier/North Holland
Oxford University Press
Plenum Publishing
Springer-Verlag
John Wiley & Sons

For exhibit space, contact
Advertising Department, AMERICAN INSTITUTE OF PHYSICS,
335 East 45th Street, New York, N.Y. 10017
(212) 661-9404

historical details. For example, how does Boltzmann's "dictionary" evolve as he addresses different problems over time? Bellone recognizes that the concept of probability is central to the work of Boltzmann and others, and that its role changes, but he doesn't identify in detail the particular route by which probability evolved from an averaging tool to a concept of fundamental physical significance. Nor does he treat with any sophistication crucial differences in the degree of commitment to mechanical models along the ontological-heuristic axis, or the frequent tension between scientists' private opinions and the views they regard as publically tenable.

Although *A World on Paper* neither lives up to historiographic pretensions nor succeeds as narrative history of science, Bellone does have some interesting things to say about his major protagonists, and the book can be read with profit by students of 19th-century physics who can exercise a moderating judgment on its claims.

KENNETH L. CANEVA
University of North Carolina
Greensboro

new books

Instrumentation and Techniques

Computer Aided Design: Fundamentals and Systems Architectures. J. Encarnação, E. G. Schlectendahl. 346 pp. Springer-Verlag, New York, 1983. \$29.50

Advances in X-Ray Analysis. Vol. 26. Proc. Thirty-First Annual Conference on Applications, Denver, August 1982. C. R. Hubbard, C. S. Barrett, P. K. Predecki, D. E. Leyden, eds. 473 pp. Plenum, New York, 1983. \$62.50

Reviews of Infrared and Millimeter Waves. Papers, 20th General Assembly of the Union-Radio-Scientifique Internationale, Washington, August 1981. Vol. 1. K. J. Button, ed. 372 pp. Plenum, New York, 1983. \$45.00

Methods of Steady-State Reactor Physics in Nuclear Design. R. J. J. Stamm'ler, M. J. Abbate. 506 pp. Academic, New York, 1983. \$48.00. *reference*

Lock-in Amplifiers: Principles and Applications. M. L. Meade. 232 pp. Peter Peregrinus, (US dist. IEEE, Piscataway, N.J.), 1983. \$60.00

Miniaturization of High-Energy Physics Detectors. Proc. Meeting, University of Pisa, Italy, A. Stefanini, ed. 259 pp. Plenum, New York, 1983. \$39.50

Fortran Optimization. M. Metcalf. 242 pp. Academic, New York, 1983. \$24.00. *reference*

High Gradient Magnetic Separation. R. Gerber, R. R. Birss. 209 pp. Wiley, New York, 1983. \$51.95

The Randon Transform and Some of Its Applications. S. R. Deans. 289 pp. Wiley, New York, 1983. \$34.95. *reference*