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G. Toraldo di Francia

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G. TORALDO DI FRANCIA

*Istituto di Fisica Superiore
Università di Firenze*

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Preface to the English edition

Five years have elapsed since the first Italian publication of this book – a fairly long time when considering the rapid pace of the progress of contemporary physics.

Although the main purpose of *The investigation of the physical world* is not to supply the latest technical information but to discuss the place of physical science in the context of modern culture and to consider its epistemological implications, some revision and updating was necessary for this present English edition. In fact, discussing today's epistemology on the basis of yesterday's science would be rather awkward.

Of course, the most important discoveries and advances that occurred during these intervening years concern astrophysics and particle physics, and accordingly, some changes have been made and new material has been added, especially in Chapters 4 and 5.

The author at this time has also taken the opportunity to clarify or to correct several points throughout, rendering this book a better edition.

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Preface to the Italian edition

This book has its origin in the seminars on the fundamentals of physics, which I have given for several years to philosophy students at the University of Florence. This should indicate the purpose of the book, as well as the class of reader initially proposed to reach. However, the result has been a much broader scope in text and consequently a wider and more varied group of possible readers.

First of all, I hope to reach the cultured reader who is aware that by accepting the absurd dichotomy between the two cultures, one simply arrives at a nonculture – the fiction of two bodies of doctrine, neither of which can rightly reflect the articulate, but indivisible, intellectual endeavor of our society.

It is often said that science is difficult and requires an amount of technical knowledge, especially in mathematics, which the average educated person does not possess. It is usually believed that an attempt to remedy this situation can be made by means of *popularization*. But there are different kinds of popularization, and I must state at the beginning that I am generally not enthusiastic about those books that present science as *science for children*.

In this book the reader will not find physics for children, with the inevitable and tedious references to *Alice in Wonderland*, but will find instead physics for adults. Those who are interested in making a real intellectual effort to understand modern philosophy, music, and poetry should find it reasonable to devote an equally serious effort to acquiring scientific culture. But the nonspecialist is met halfway; only a few simple concepts of high school algebra are required, whereas an attempt has been made to explain the more advanced material as clearly as possible. Perhaps being “simple” may result in being “simplistic,” but it is a risk, which, I believe, is worthwhile.

For high school teachers of physics or general science this book may be useful in helping to familiarize them with a philosophical approach to science, which, although not aimed at *superseding* that of standard college or university textbooks, will favor a new and deeper insight into the subject. Thus the gap between what the philosophy instructor teaches and what the physics instructor teaches can be narrowed and at the same time can provide the means to satisfy the many intellectual curiosities and cultural needs of intelligent students.

In addition, my intent is to reach science students, too, particularly

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students of physics. This book aspires to represent for them an introduction to the critical analysis of the foundations of their subject, as well as to help them dissolve the dangerous illusion that many current doubts and perplexities concerning the value of science have only arisen today, instead of having had a long history.

There are many people whom I wish to thank for their assistance, friendship and expertise, and contribution, in one way or another, to the making of this book.

I am greatly indebted to Milla Baldo Ceolin, Carlo Ceolin, Claudio Chiuderi, Maria Luisa Dalla Chiara, Aldo De Luca, Bruno de Finetti, Corrado Mangione, Mario Polsinelli, Willard V. Quine, Guglielmo Righini, Giorgio Salvini, Matthew Sands, who have read all or part of the manuscript and have suggested essential improvements. Among the many people who, through conversations, discussions, seminars, or correspondence, have helped to clarify some important points, I would like to mention E. Agazzi, E. Bellone, A. Borsellino, L. Bulferetti, M. Bunge, E. Casari, C. Cellucci, M. Cini, R. S. Cohen, G. Cortini, D. Costantini, L. Geymonat, M. Jammer, P. Rossi Monti, W. Shea, B. Touschek, R. Wójcicki. Above all, I am extremely grateful to the many students who, by continuous, intelligent, and stimulating discussion, have enabled me to examine, verify, or improve my “investigation of the physical world.”

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