



Foreword

Time passes . . . listen time passes. Those haunting words of Dylan Thomas at the beginning of *Under Milkwood* leave no doubt for anyone with a human soul; time is real and is diminishing away fast. Yet if the same person has suffered anything like scientific education then he is in for a shock. The basis of our science, the theories of Newton, Einstein and Heisenberg, are blind toward a distinction between past and future. How could this be? Great minds of modern philosophy, such as H. Bergson and M. Heidegger, reacted to this schizophrenia by developing a more or less understandable scepticism towards science in general and physics in particular. This in turn led them even further away from the truth they were searching for. There were however exceptions among scientists who looked to biology, chemistry and evolution for inspiration. None could be more notable nor more tragic than the Viennese physicist Ludwig Boltzmann. However, with the advent of modern non-linear dynamics the situation seems to have taken a more fortunate turn and the stage seems to be ready for a fresh and promising attack on the enigma of the time dimension. Indeed the results of modern research in chaos and fractals indicate new possibilities for a new realism in physical science and a resolution of the time paradox in a synthesis combining the holistic and reductionist viewpoint. The present issue looks at the problem of reversibility and the arrow of time from two different viewpoints which may be complementary, namely that of the Brussels school of non-equilibrium thermodynamics and that of the relatively new theory of Cantorian micro space-time. Whether or not the arguments posed here will prove to be final and convincing for the prospective reader, one thing is already sure, our realism cannot in any sense be equated to determinism. It is also clear that a realistic interpretation of macro and micro physics is not only possible but also feasible. However, it seems extremely unlikely that there could ever be a return once again to classical determinism. In fact, one could easily argue, based on even the preliminary general results of modern chaos research, that classical determinism is fundamentally unrealistic. In this sense physics, and indeed the universe, may be unpredictable and worrying, but it is also innovative, exciting and simply beautiful.