

1 Introduction

Carlo Cercignani, (1998), Ludwig Boltzmann: the man who created atoms, Oxford: Oxford University Press

The enigmatic success of mechanics till 18th century made the scholars almost blind. Some of the constructors of mechanic automata had to face Spanish Inquisition because they were suspected of black magic. The real aim of mechanics according to Herman von Helmholtz (1821-84) was to construct a machine that performs a single act approximately perfectly to replace thousands of men performing the same task.

H-curve relates to the Second Theorem of thermodynamics. It is on entropy and irreversibility S. H. Burbury states that "So there is a general tendency for H to diminish although it may conceivably increase in particular cases. Just as in matters political, change for the better is possible, but the tendency is for all change to be from bad to worse." (p. 129)

2 Boltzmann Method

Boltzmann was really concerned with the mathematical problems arising from the atomic models of matter. Differential and integral calculus divorced from any atomist notions, for him, were typically metaphysical due to Mach. Probabilistic discrete mathematics served him better.

"In mathematics and geometry the return from purely analytic to constructive methods and illustration by means of models was at first occasioned by a need for economy of effort. Although this need seems to be purely practical and obvious, it is just here that we are in an area where a whole new kind of methodological speculations has grown up which were given the most precise and ingenious expression by Mach, who states straight out that the aim of all science is only economy of effort. With almost equal justice one might declare that since in business the greatest economy is desirable, the latter is simply the aim of shops and money, which in a sense would be true. However, when the distances, motions, size and physico-chemical properties of the fixed stars are investigated, or when microscopes are invented and with their help the causes of diseases are discovered, we would hardly wish to call this mere economy." (p. 175)