

Welcome Remarks at the Boltzmann Commemorative Meeting

On behalf of the entire scientific communities involved in the event, and on behalf of my own institution, ICTP, as much as on my own, I wish to welcome you to this Boltzmann commemorative meeting. In the next 90 or so minutes, the speakers on schedule will tell us more about Boltzmann---the person and the scientist. I shall not add much to this but wish to record a few personal thoughts.

I was about 20 when I studied Boltzmann's own work in some detail: the Boltzmann equation, the Boltzmann H-theorem, the Boltzmann distribution, and so forth. My enthusiasm for his work was immense not least because of the ebullient style of writing---for example, his book on Gas Theory. You have only to read his description of Maxwell's work on the inverse fifth-power of the interatomic repulsive force to prove my point. It simply overflows with enthusiasm, and shows clearly how much he enjoyed his work.

It was thus a great shock to me when I learnt that this great scientist---which he no doubt was---killed himself because of the adverse criticism of his work by his contemporaries, some of whom were no doubt of smaller imagination on hindsight. I now know that the reasons for Boltzmann's suicide were more complex than what I have just remarked, but the personal impact on me was nonetheless lasting. I resolved to myself that I would never let my own creativity, such as it is, not to be adversely affected by such criticisms.

Perhaps no other episode connected to a scientific life has had a deeper impact on me. This episode also explained to me the torment that he often expressed in his philosophical writings. For instance, at one point, he expresses the absurdity of demanding that one should define each concept precisely at the time of introducing it. At another point, he quotes Schiller who told this to scientists and philosophers of his day: “Let strife divide you; it is too early for a pact”, but himself went on to say, “I do not dissent; but think that the time for a pact has come”.

Given this special bond, I regard it as nothing but providential that I happen to be located so close to Duino one hundred years after the event. We could very well not let this day pass unnoticed, though we did not want to commemorate it on a grand scale. This is the genesis of this meeting. In more concrete terms, it has been possible because of the following:

- The continual help provided by my colleague Professor Claudio Tuniz;
- The enormous leg work of Mr. Fabio Pagan of ICTP. In particular, it was he who found out precise place where Boltzmann’s life ended;
- The graciousness of the local authorities, such as the Mayor of Duino, Giorgio Ret; Prince Carlo della Torre e Tesso; and the Rector of the United World College, Mr. Marc Abrioux.
- The cooperation and help of my own staff and many others at ICTP, whom I cannot name.

To them all, I owe many thanks.

I also wish to thank:

- All the speakers---Professor Leo Kadanoff of the University of Chicago and the American Physical Society, Professor Peter Lagner of the Technical University of Graz and Austrian Academy of Sciences, and Professor Giuseppe Mussardo of SISSA.
- Others of the Austrian Academy, such as Professor Wolfgang Reiter and his colleagues from the Erwin Schroedinger Institute of Mathematical Physics. The connection to Austria is no doubt strong because this part of the country was a part of the Austro-Hungarian Empire for many centuries.
- The Rector of the University of Trieste, Professor Domenico Romeo, the President of Sincrotrone Trieste, Professor Carlo Rizzuto, Professor Giulio Maier, the Rector of CISME, and many other distinguished guests present today. Stefano Fantoni?
- My distinguished colleagues at the Conference on Convection, who have come from many parts of the world and have taken the time to be present here this morning. I am especially pleased about their presence because they are among the ones who are pushing the frontiers of science that Boltzmann opened up more than a hundred years ago.

- To all ICTP scientists and Associates.

I have the pleasure of welcoming all the others as well, in particular the students of the United World College of Duino, which is where we will go after the scientific part of the meeting. I hope that the students will gain something positive from this experience.

This brings me to the close of my welcome remarks.

These remarks were supposed to be followed by Prince Carlo who has generously allowed us the use of the castle and its facilities for the event today. Unfortunately, because of an accident, he is unable to be present here. He would doubtless have enjoyed the occasion. On behalf of all of us here, I wish him speedy recovery and record my appreciation for his help.

We now go to the scientific program.

I have the pleasure of introducing one of the stalwarts of Statistical Physics today, Professor Leo Kadanoff. Leo is best known for introducing the concept of scaling in the theory of critical phenomena and phase transitions. He has made deep contributions to chaos, multifractality and turbulence, among other things. Throughout his career, Kadanoff has brought clarity to complicated problems, and let productive groups of many scientists.

I now have the pleasure of introducing Professor Peter Lagner of the Technical University of Graz. He is the

managing Director of the Institute of Biophysics and Nanosystems Research at the Austrian Academy of Sciences at Graz.

Professor Giuseppe Mussardo is a well-known field theorist with very broad interests in high-energy physics and statistical physics. He teaches at SISSA. He has