

## A tribute to Virginio Bortolani

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## PREFACE

# A tribute to Virginio Bortolani

I met Virginio Bortolani at a meeting in Salerno (Italy) in summer 1977, when I was a fresh post-doc, just back to Italy after two years at the University of Liverpool (UK). At that time since 1972, Bortolani was the first Chairman of the Surface Physics Section of GNSM (Gruppo Nazionale di Struttura della Materia) of the Italian science research council (CNR), position which he held for about a decade. So I approached him with the formal respect due to a senior scientist by a younger fellow, which was customary at Italian Universities. However, his manners looked very non-conventional for those times. While smoking his daily  $n$ th cigarette, first he said to me ‘Diamoci del tu’<sup>1</sup>, and then started getting information about my work in a way which was both friendly and fatherly.

Since then we crossed each other at several meetings, often discussing physics, but we only began to collaborate at a summer school at ICTP (Trieste) in 1988. There Bortolani, one of the Directors, had the excellent idea of involving T B Grimley and myself in a project in order to investigate theoretically trapping/desorption phenomena of noble gases at metal surfaces owing to phonon interaction. Eventually we understood the limits of validity of Knudsen’s law for phenomena out of equilibrium such as those in chopped beam experiments. During that school, which lasted for many weeks, I was most impressed by the relaxed atmosphere that Bortolani was able to create and maintain throughout the event. Everyone from the newcomer student from Asia, Africa or Latin America, to the top scientist felt at ease. This helped students from developing countries to interact with the lecturers beneficially, and allowed other people like me to start a few very fruitful collaborations. By the way the proceedings of that school, edited by V Bortolani, N H March and M P Tosi, and published by Plenum Press in 1990, are still a classic in surface science, and we often refer to them as the ‘red book’ by the colour of its cover reminiscent of another more famous book.

But I do not wish to dwell upon pleasant memories of my relationship with Virginio Bortolani any longer. We should better record a few important facts of his broad activity. J P Toennies will outline Bortolani’s achievements in the field of surface phonons and vibrations in a review article of this volume. So I would like to stress other very important contributions of his to the scientific development in this country and to the international community.

In the late seventies surface physics was being studied by very few and tiny groups in Italy (mainly at Genova, Milano and Roma Universities). But Bortolani was able to form the first theoretical group of international reputation in this field in Italy at Modena University. In this respect he was surely helped by his previous experience at the Cavendish Laboratory working with V Heine on the theory of pseudopotentials and with N Mott. This allowed him to be at the forefront of condensed matter theory so that to propose and carry out exciting research subjects. Bortolani also supervised all the initiatives in the 70s and 80s from which Modena has grown so much as to be now considered an internationally recognized centre of surface science and nanotechnology. Second, by organizing a conference in Modena every year the week before Christmas (the so-called Congressino di Modena by the Italian participants), he promoted the diffusion of surface physics in the country: it became soon traditional for

<sup>1</sup> The literal translation would be: let us switch from ‘you’ to ‘thou’, and in modern English it is equivalent to being on first-name terms

bright young physicists to come to Modena on that occasion, and, because of the exciting and friendly atmosphere, to turn to surface investigations. The catalysing activity of Bortolani is also confirmed by the number of his students who have matured into excellent scientists or technologists: Carlo Calandra, Carlo Maria Bertoni, Franca Manghi, Fabrizio Nizzoli and Giorgio Santoro of the older generation, then Anna Franchini and Elisa Molinari, finally Carlo Cavazzoni, Stefano Martinelli, Andrea Vannossi and Roberto Zivieri who are still in their thirties. They were all attracted and benefited from Bortolani's stimulating, open and constructive personality. The same qualities and his expertise in surface physics and lattice dynamics motivated a number of outstanding scientists to collaborate with him and often write joint papers during his long career: G Boato, V Celli, G Chiarotti, T B Grimley, A A Maradudin, D L Mills, J P Toennies, E Tosatti, R F Wallis are a few examples.

Finally I would like to recall two more distinctive features of Virginio Bortolani, which stem from his honest character and balanced personality. First, since quite a few years he showed no more interest in powerful positions, both at his University, where he was also Director of the Physics Department from 1993 to 1999, and in the Italian physics community. And he often left such positions to those colleagues he carefully looked after at the beginning of their career. Currently he is the only honorary director of PhD studies in physics at Modena University, and editor of Surface Science Reports. In this way he teaches us that there is a specific time for a specific role in life, and that the arrow of time cannot be reversed. Still he enjoys research and he is very active, regularly publishing papers on vibrational friction and gas-surface dynamics as a result of the supervision of a small group and of a bunch of selected international collaborations. Second, in any occasion, but especially when he was in charge of an institution, of a meeting, or works in an editorial board, he was and he is never in favour of rough competitive research, aggressive presentations and intensive paper production. Bortolani's interests are otherwise: inner satisfaction, after truly understanding a physical problem or presenting clearly a difficult subject to his students, contemplation in front of a beautiful sunset in the lonely Tombstone in Arizona (he is a fan of classic western films and history and so does know about the real facts of the 'Gunfight at the OK Corral'), biking through the woody Apennines, a nice meal, better enjoyable for the company than for food, the careful search for a new rare piece for his collections, but most important friendship and respect among colleagues and a strong belief in his principles. Would we comply with his behaviour, could research do any better?

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