Heinz-Dietrich Dœbner — an accomplished octogenarian

L L Boyle
Vine Cottage, Patrixbourne, Kent CT4 5BX, UK
E-mail: Laurence.Boyle@gmail.com

Abstract. A scientific biography of Heinz–Dietrich Dœbner is presented on the occasion of his 80th birthday. Dœbner has been responsible for fostering the development of theoretical physics both in Germany and internationally. His scientific interests have centred around the quantum theory of both linear and non-linear systems moving on manifolds for which a technique known as Borel quantisation was developed in his group at Clausthal. He was responsible for establishing the Arnold Sommerfeld Institute within the Theoretical Physics Department at Clausthal. This provided a base for visiting scientists for many of whom funding was obtained from various sources.

1. Introduction
It would be remiss of us to fail to celebrate in 2011 the 80th birthday of Heinz-Dietrich Dœbner, who liked to be known as HDD, and use the occasion to celebrate his achievements, both in Germany and internationally, in actively encouraging the study of theoretical physics.

Figure 1. Heinz-Dietrich Dœbner lecturing at the Czech Technical University in Prague in 2009.

2. Biography
The surname Dœbner, spelt thus, is currently rather rare in Germany possibly due to emigration to the United States in the 19th century. At that time HDD’s branch of the family lived in Alt-Kalzenau, now known as Kalsnava in Latvia. His father, Heinrich Eduard Dœbner, was an apothecary and his uncle, Theodor Dœbner, was a landscape artist of some distinction and, as President of the Latviešu
Hans-Dieter Dürr (HDD) was born on May 11th, 1931, and was to be their only child. The Second World War disturbed his childhood: the family home was bombed in 1944 necessitating a move to rooms above the pharmacy. Then Spandau was occupied by Russian forces in 1945 and he had to learn Russian at the Freiherr-vom-Stein-Oberschule. When Berlin was partitioned, Spandau was in the British zone and so Russian had to be forgotten and replaced by English. However, there was another linguistic problem at this school in that the teacher of English, preferring a theoretical approach, would only speak to the pupils in German and never in English. This was not a problem with the teaching of Latin, which HDD had to wait a year before going up to university because priority was given to German prisoners-of-war returning from Russia. He spent this gap year working in the combustion section of the Materialprüfungsamt (Materials Testing Office). He applied to both the Freie Universität and the Technische Universität in West Berlin and was advised by his father to choose the Freie Universität as the Technische Universität was too practically orientated. Accordingly in 1950 he matriculated at the Freie Universität where he was taught by Günther Ludwig who was interested in philosophical aspects of theoretical physics and was regarded by his biographer as having a very lively character and the ability to stimulate students to think. In 1953 Werner Heisenberg and Wolfgang Pauli wrote a draft paper on quantisations of relativistic non-linear wave equations, i.e. an almost-heuristic, non-linear, version of the Dirac equation. Ludwig invited Heisenberg for a seminar and the questions asked included “Is there any chance of applying the quantisation of their heuristic, non-linear, equation to its non-relativistic limit?” Heisenberg replied that only relativistic wave equations are relevant to particle physics. This was HDD’s first encounter with non-linearities.

In 1955, HDD commenced his Diplomarbeit which was completed in 1956. He was employed from 1957 as a temporary wissenschaftlicher Assistent (research and teaching assistant) supplemented by a similarly temporary, hourly-paid, Lehrauftrag in elementary-particle physics in Ludwig’s research group. In 1962 HDD was awarded the degree of Dr. rerum naturalium for a thesis entitled “Über einige Rechenverfahren der axiomatischen Quantenfeldtheorie” [On some calculational procedures in axiomatic quantum-field theory]. In 1963 Ludwig moved to the Philipps-Universität in Marburg-an-der-Lahn where he was head of the Institut für die Struktur der Materie and offered HDD a position of Akademischer Rat which was similar to the wissenschaftlicher Assistent post at Berlin but permanent. In 1965 he was awarded his Habilitation, a necessary qualification for the honorary title of Privatdozent which he was accorded that same year. This title qualified him to examine doctoral theses. In the following 5 years at Marburg he supervised 12 of the doctoral students.

In 1970 HDD received an irresistible offer to take up a chair of theoretical physics at Clausthal. This gave him the opportunity to set up in 1976 an international centre for teaching and research with regular international meetings and lectures by guest professors within Section A of the Institute for Theoretical Physics. This was crystallised in 1983 as the Arnold-Sommerfeld-Institut (ASI). Sommerfeld himself had only been in Clausthal from 1897 to 1900 where he occupied the chair of mathematics at the Bergakademie. Sommerfeld always valued his time at Clausthal as it enabled him to afford to get married. He was already interested in partial differential equations which provided a sufficiently good connection with HDD’s interests to justify naming the institute in his honour. The work at the ASI developed Sommerfeld’s interests in partial differential equations and quantum
numbers with HDD’s interests in non-linearities. HDD wrote “I was surprised, and in a way satisfied, to find (together with Jerry Goldin and Jiří Tolar) that Borel quantisation, which was developed in the Clausthal group, could be used to connect global properties of the kinematics of non-relativistic systems moving on smooth configuration spaces with possibly non-trivial topologies. This connection yields families with non-linear partial differential operators for the wave function with a new quantum number in front of the non-linear term”.

In the period from 1977 to 1999, when HDD retired, 45 international conferences and seminars were held with a total of about 3000 participants from all over the world. 31 volumes of conference proceedings, which were edited by HDD and his colleagues, resulted from these. In addition to HDD’s post of Director, there were 2 permanent posts (occupied by Wolfgang Lücke and Jörg-Dieter Hennig) and 2 temporary posts (occupied by Peter Nattermann and Wolfgang Scherer amongst others) associated with the ASI. The Humboldt Foundation sponsored 21 Fellows from 15 countries and 2 Awardees (of which Irving Segal and Gerald Goldin were the recipients). There were about 20, mostly doctoral, students supported by the Deutsche Akademische Austausch-Dienst and other funding bodies in addition to 6 post-doctoral workers. About 10 employees were supported by the Deutsche Forschungs-Gemeinschaft or equivalent bodies. At any given time there were additionally up to 11 scientists and 5 Diplom students. In all 105 scientific articles were published by HDD and his group.

3. External appointments
HDD lectured in Bonn in 1965–6 by invitation of Horst Rollnik and served as a guest professor at the International Centre for Theoretical Physics at Miramare di Grignano, Trieste, for various short periods from 1975. He gave lectures in universities and institutions in various countries in North America, Europe, the Middle East, Africa and Asia. He had a very significant appointment in Osnabrück where he was appointed chairman of a committee to found a university. He became chairman of this new university from 1971 to 1974 and its first Rektor. His work extended also to the social needs of the students by acting as chairman of the Student Counselling Service for Lower Saxony from 1977 to 2001.

4. Conference work
As well as the regular series of conferences established at the ASI, HDD was involved in external international series of conferences notably the International Colloquia on Group-Theoretical Methods in Physics. His interest started in 1981 when he sent his student, Bernd Angermann, to the 10th Colloquium which was held in Canterbury, Kent. Subsequently he became a regular attender and

![Figure 2. Laurence Boyle, Heinz-Dietrich Döbner, Pavel Winternitz and Joseph Birman at the meeting in the Sheraton WalkerHill Hotel, Gwang-jin, Seoul, of the Standing Committee of the International Colloquium for Group-Theoretical Methods in Physics in 1985.](image)
Konrad Bleuler proposed him for membership of the Standing Committee which he was accorded at an election in February 1984. Ten years later he was elected chairman following the resignation of Lawrence Biedenharn. One of his noteworthy contributions to this series was the establishment of a Weyl Prize for the best recent contribution to the use of group-theoretical methods in physics made by a scientist not over 35 years old. HDD remained as chairman until 2008 when he had to retire, along with 7 other established members, as a consequence of some new clauses in the constitution introduced by a radical sub-committee. Jean-Pierre Gazeau was elected as his successor. There was also a series of International Conferences on Differential Geometric Methods in Theoretical Physics held in various locations around the world. HDD was a co-editor of several of its volumes of proceedings. In 1995 HDD founded, together with Vladimir Dobrev, an active and successful, although smaller, series of conferences on Lie Theory and its Application in Physics.

The conference which gave rise to the current series of International Symposia on Quantum Theory and Symmetries was his retirement conference held at Goslar in 1999. These symposia are held every two years and interleave with the International Colloquia on Group-Theoretical Methods in Physics.

5. Editorial work
Apart from editing volumes of conference proceedings, HDD has been a member of the Advisory Board (and a co-editor for some time) of Reports in Mathematical Physics since 1987. He was also a member of the Advisory Board of the Journal of Mathematical Physics from 1991 to 1993.

6. Internal Assignments
HDD was appointed to be Director of the Institute of Theoretical Physics at Clausthal in 1970, a post he held until retirement. He became Chairman of the Physics Department in 1977 and remained so until 1993. In 1981 he was elected Dean of the Faculty of Mathematics and Natural Sciences, a task which also occupied him until 1993. Finally in 1983 he became Director of the Arnold Sommerfeld Institute for Mathematical Physics which he had founded and remained so until 1993.

7. Presenting and receiving awards
One of the most pleasant duties of HDD’s time as Dean was to present Yuval Ne’eman with an honorary doctorate in the Aula Magna of Clausthal University in June 1990.

This was not a one-way traffic: in 1995 HDD was made an Honorary Member of the Bulgarian Physical Society. In August 1991 he received the Verdienstkreuz erster Klasse (Order of Merit Class I) of Lower Saxony. On retirement in 1999 he became the recipient of the Werner Heisenberg Medal of the Humboldt Foundation, the Médaille de l’Université de Nancy and the Medal of the 1st degree of
the České Vysoké Učení Technické (Czech Technical University) in Prague. Another honour was the publication of a *Festschrift* [1] following his 60th birthday. In March 2006 he was awarded a diploma for substantial services to the Joint Institute for Nuclear Research, Dubna, Russia. A lecture in honour of his 75th birthday was delivered at the *Symphys* symposium in Yerevan in 2007 and subsequently published [2]. [Readers of this article, which contains anecdotal information and a photograph not repeated in this article, should replace the word *Heidelberg* by *Berlin*.

8. **Personal data**

Biographies of scientists often avoid discussing the subject’s private life. However, we should congratulate HDD and Helga Riedel on the golden anniversary of their wedding in 2010. In their time at Clausthal, Frau Dœbner became a *Richter* (judge) in the *Amtsgericht* (District Court) at Goslar. They had one child, Victoria, who also became a physicist but got her doctorate in experimental physics as a pupil of Herbert Walter, who was *Direktor* of the *Max-Planck-Institut* in Munich at the time.

![Figure 4. The Dœbner–Riedel equation. HDD and Helga at a conference dinner in the Hotel Achtermann, Goslar.](image)

**References**

[1] Hennig J-D, Lücke W and Tolar J (eds.) 1991 Differential Geometry, Group Representations and Quantum Theory, *Lecture Notes in Physics*, 379.

[2] Boyle L L 2008 Heinz-Dietrich Dœbner — an appreciation, *Physics of Atomic Nuclei*, 71, 777–9.