

Dietrich Stauffer: Unconventional in Science and Life

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Dietrich Stauffer (DS) was born in Bonn on 6th February, 1943. He was awarded the Ph.D. degree in Physics by the Technical University of Munich in 1970 for his thesis on phase transitions and superfluidity of helium. After doing postdoctoral research in USA over the next few years, on phase transitions [1], droplet model and nucleation [2], he returned to Germany to join Kurt Binder's group at the Saar State University, Saarbrücken. During this period the classic works of Binder and Stauffer on the cluster theory of nucleation were published [3]. He completed his "Habilitation" (required as eligibility for tenured professor positions in Germany) in Saarbrücken in 1975. Then, in 1977, he joined the faculty of the University of Cologne as an associate professor in the Institute of Theoretical Physics where he has remained ever since.

During the second half of the 1970s and in the 1980s, DS carried out extensive computer simulations of disordered systems. The most notable of these include the pioneering works on percolation and its relations with critical phenomena in Ising ferromagnets and gelation in branched polymers [4–6], short runs of computer simulations (in collaboration with Binder's group at KFA Jülich) of spin glasses [7]. Using supercomputers available at that time, and sometimes developing computer codes for bit-by-bit logical manipulations to augment system size, he (and his collaborators) carried out some of the longest simulations, of the largest possible systems, to address some of the most controversial challenging questions on random-field Ising model [8], impurity-diluted Ising model [9], fractals [10], fracture and breakdown [11], dynamics of spreading phenomena [12] and growing surfaces [13]. His review article on percolation theory [4], published in *Physics Reports* in 1979 was immensely popular and eventually, its expanded version [5] that was published as a book, became his most cited work.

DS was one of the two founder directors of the German Supercomputer Center "Höchstleistungsrechenzentrum" set up in 1989 at the Research Center Jülich. One of the main areas of research pursued by his many-body group was cellular automata [14]; these works include systematics of cellular automata [15] and its applications to lattice-gas hydrodynamics [16], immune network [17], etc. Another area of interest included fractal dimension of the droplets in the Ising model [18].

Alarmed by his fiftieth birthday, he picked up biological ageing as one of the topics of his research, with a faint hope that he may be able to stop his own ageing. From these (purely theoretical) studies, he learnt the problems of "sex" (in the reproductive processes in nature) [19]. Although he has made some conventional applications of statistical

mechanics [20–22] over the last 15 years most of his work of this period are interdisciplinary. Besides ageing, the other interdisciplinary topics included microemulsions and micellar solutions [23], how to avoid washing (by simulating soap) [24], socio-physics [25], econo-physics [26], origin/extinction of species [27]. Most of these require unconventional applications of statistical physics far beyond the traditional boundaries of physics. However, to my knowledge, DS made the first unconventional application of statistical mechanics almost thirty years ago [28].

In addition to five books [5,19,29–31] and editing the series *Annual Reviews of Computational Physics*, so far DS has more than 500 papers to his credit. However, he is not a co-author of many papers written by his students and postdocs. He usually suggests the topics of undergraduate thesis to his students and spends many hours discussing with them. However, the students often publish single-author papers based on their thesis work. A large number of his multi-author papers have been written with many collaborators from all around the globe.

One of his major services to the International community of statistical physicists, which is not visible in his list of publications, is the large number of manuscripts he speedily referees either as a referee or as an editor. He has served as a member of the editorial board of *Journal of Physics A*, *European Physical Journal B*, *Physica A*, *Journal de Physique*, *Journal of Statistical Physics*, *Theory of Biosciences*, *Journal of Aerosol Science*, *International Journal of Modern Physics C*, *Physics World*, *Computing in Science and Engineering* and *Annual Reviews of Computational Physics*. Be it as a referee or an editor, his (liberal) policy is to accept a paper if at least a part of it appears interesting although other parts may be controversial. For many years, DS successfully ran summer schools on computational physics for the school students of the city of Cologne (encouraged by a similar effort by Gene Stanley in Boston).

Other than doing physics, he also enjoys jazz music. He has deep interest in history, politics and international affairs. DS is a staunch believer of internationalism and has participated in rallies against war and discrimination. He does not mind sharing his computer codes with others, even when he puts in long hard work in developing those codes. He believes in conservation; except for a brief period when he had to commute daily between Cologne and Jülich at odd hours, he never owned a car in the last two decades and uses the public transport system. For all his rough work he always uses the reverse side of waste papers printed only on one side.

When I first went to work with DS in 1984, I used to see him practically always in his office because he would be in front of his computer terminal when I used to go home at

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midnight and I would find him again on the same chair when I would come to the institute at around 8 a.m. in the next morning. Whenever we heard somebody running in the corridor of the first floor of the institute we knew Stauffer was collecting his print-out from the computer room as he always minimized wastage of useful time. Recently, after I heard the sad news of a stroke of a close friend (and collaborator) of DS I said, “Now you should also reduce your working hours and pay attention to your health”. His answer was, “No, one should work as hard as one can to complete as much work as possible because one never knows how long one’s fate will permit that”. (Because of ageing, and not my advice, he now stops working everyday at 10 p.m.!) Only people strongly believing in the philosophy “work is worship” can practice it in real life. On behalf of his collaborators, colleagues, former students, postdocs and on my own, I wish him at least another 60 years of fun with unconventional applications of statistical physics.

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