THE INTERVIEW COLUMN

BY

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KNOW THE PERSON BEHIND THE PAPERS

Today: Kurt Mehlhorn

Bio: *Kurt Mehlhorn was a vice president of the Max Planck Society and director of the Max Planck Institute for Computer Science. He graduated from the Technical University of Munichand earned his Ph.D. from Cornell University. Among other, Mehlhorn is known for his contributions to the development of algorithm engineering and he played an important role in the establishment of several research centres for computer science in Germany, including the MPI for Computer Science, the research center for computer science at Dagstuhl and the European Symposium on Algorithms.He won the Gottfried Wilhelm Leibniz Prize, among many other prizes.*

We ask all interviewees to share a photo with us. Can you please tell us a little bit more about the photo you shared?

Kurt: I share two photos. The first shows me in my office; the picture was taken in 2018. You can see that I enjoy my work, that our institute is located on the border of a forest, and that I am quite effective in producing earth-shaking results. The crumbled papers on the table are testament to this.

The second picture is from 1973. It shows my wife Ena and me at a picnic of the CS department of Cornell University, where I was a graduate student.

Can you please tell us something about you that probably most of the readers of your papers don't know?

Kurt: When I started to study computer science in 1968, I had never used a computer. I had even never seen one except on pictures. Programming fascinated me from the beginning; it is an act of creation.

Is there a paper which influenced you particularly, and which you recommend other community members to read?

Kurt: Let me start with a non-scientific paper. The book Summerhill by A. S. Neill. We (my wife, I, many friends) read it in our twenties and it heavily influenced how we raised our children and how I treat students.

I was a graduate student from 71 to 74. Cook's paper on the NP-completeness of the satisfiability problem appeared in 71 and Karp's paper with the first 21 NP-complete problems appeared in 72. A first draft of the book on Efficient Algorithms by Aho, Hopcroft, and Ullman became available in 73. They were bibles.

Is there a paper of your own you like to recommend the readers to study? What is the story behind this paper?

Kurt: Read the article "Trustworthy Graph Algorithms" by Mohammad Abdulaziz, myself, and Tobias Nipkow (Invited Talk, MFCS 2019). It has a 30-year story behind it. In 1989, Stefan Naeher and I started to develop the library of

efficient data structures and algorithms LEDA. Some of our implementation were incorrect. This experience shaped part of my research agenda until today. The paper discusses what we have learned from this experience and how we have made LEDA a reliable product.

When (or where) is your most productive working time (or place)?

Kurt: I am a morning person and try to be on my desk by 8 am. My mornings are reserved for research. I keep my office door closed; I do not accept phone calls and I do not tolerate interruptions. I read, think, and write. After lunch, my office door is open, I interact with students and co-workers, teach and administrate, write reports, and so on. By 5:30, I go home. I sometimes work in the evenings, but never after 10pm.

Of course, the schedule is different when I travel. It was very different when I was vice-president of the Max Planck Society.

My favorite work place is my office, but I can work almost everywhere. Earplugs help a lot.

What do you do when you get stuck with a research problem? How do you deal with failures?

Kurt: Failures are the rule not the exception; see the crumbled paper on the picture. I keep on trying and trying, I discuss the problem with students and colleagues, I put it aside and return to it later, and sometimes I give up on a problem completely. However, I was lucky that most problems that I worked on so far, gave in ultimately.

Is there a nice anecdote from your career you like to share with our readers?

Kurt: What brought me to Saarbruecken? I got my PhD from Cornell in 1974. I wanted to stay in the US and had an offer from Carnegie Mellon, but my wife wanted to return to Germany. Her degree was not valid in the US and she wanted to go back to work. I asked my professors where I should apply. Juris Hartmanis who knew Germany well recommended Bonn, Munich, and Saarbruecken. I applied at all three places and interviewed in the late spring of 1974. My meetings with Rudolf Bayer in Munich and Guenther Hotz in Saarbruecken went well and both offered me orally a position as a researcher. The written offer would follow in a few days. I went back to Cornell, the written offer from Saarbruecken arrived two weeks later, but the written offer from Munich did not come within the next two months. Hence, I accepted the offer from Saarbruecken. I grew up near Munich and we would have decided otherwise, had the offer from Munich arrived in time.

I actually received the offer from Munich after I started my position in Saarbruecken. The letter from Saarbruecken was sent by airmail and took a week to

cross the Atlantic, the offer from Munich was sent by regular mail, crossed the Atlantic on a ship twice (it arrived at our address in Cornell after we had left and then was sent to our new address in Saarbruecken), and hence took months to arrive. Thus, a missing airmail postage stamp had a decisive influence on our lives.

It never occurred to me at the time that I could call Rudolf Bayer to inquire. And email did not exist yet.

Do you have any advice for young researchers? In what should they invest time, what should they avoid?

Kurt: Try to develop depth and breadth. Only depth in a particular area will make you famous, only breadth will allow you to switch topics easily.

What are the most important features you look for when searching for graduate students?

Kurt: Their intellectual capabilities, their desire to understand, and interests for topics beyond CS.

Do you see a main challenge or opportunity for theoretical computer scientists for the near future?

Kurt: Theoretical computer science is striving and new questions and topics arise all the time: fine-grained complexity, the convergence of continuous and discrete optimization, the opening up to questions in economics and learning, to name a few.

When I look back at my career, every 10 years I started to work on topics that I had not known to exist a decade earlier.

How was your research affected by the pandemic? How do you think it will affect us as a community?

Kurt: The pandemic did not affect my research much. In fact, I travelled much less and in this way gained additional time for research. I found reasonably efficient ways of interacting with my students and co-workers. What I miss most is the informal interaction over lunch and coffee.

Please complete the following sentences?

- *My favorite movie is...* I do not have one.

- *Being a researcher...* is my dream job. In fact, I do not consider it work. It is pure pleasure.

- *My first research discovery...* turned out to be incorrect.

- *Theoretical computer science in 100 years from now...* will be going strong, although, it will be very different from what it is now.