

In Memoriam Christian Freksa

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On 12 November 2020 one of the most important and yet most unpretentious scientists in AI and cognitive science has passed away: Christian Freksa (Fig. 1). One of us (R.S.) had known Christian for one decade because of our shared interests in Fuzzy Sets and Fuzzy Logic. And over the last year, we both (H. P. and R. S.) had been in close contact with him, communicating many times on the history of AI in Germany and meeting in Munich and Bremen for long and interesting discussions.

Born in Offenhausen, Germany, on 26 June 1950, Christian had studied at the Technical University Munich (TUM) and the Max-Planck-Institute (MPI) for Psychiatry before moving to the US. He received a BS in Computer Science from the University of San Francisco (USF) in 1974.

While at USF Christian met several computer science pioneers, among them John Backus and Donald Knuth. These meetings and their talks inspired him to travel around the US during and after his studies to visit other labs. Thus, he went to John McCarthy's Stanford AI Lab, Larry Stark's Berkeley eye movement lab, the Computer Science Department at the University of British Columbia in Vancouver, Canada, as well as the MIT's AI Lab in Cambridge, Massachusetts. During his stay at the MIT, Christian had a chance encounter with Marvin Minsky, whose offer to Christian to take home copies of some of the work being done there on AI resulted in Christian deciding to pursue a doctorate in the field.

Christian accepted an offer from the University of California at Berkeley and in 1975 joined their Cognitive Science Program, where Lotfi A. Zadeh became his doctoral supervisor. Christian's combined interests in artificial intelligence and cognitive science showed in his choice of subjects: while he majored in AI, he also took minors in

cognitive psychology and bioengineering. The late 1970s were also seeing the institutionalisation of cognitive science in the US, with a joint interdisciplinary program at Berkeley, funded by the Sloan Foundation, introducing Christian to such figures as George Lakoff, John Searle, and Hubert Dreyfus.

In 1981, he received his PhD at the intersection of perception, knowledge representation, and reasoning; the title of his thesis was "Linguistic Pattern Characterization and Analysis". Because of their common research interest in Fuzzy languages, Christian was in contact with Wolfgang Wahlster who later encouraged him to join Wolfgang Bibel's AI (or "intellectics") group at TUM. Christian took up his position in Bibel's group in 1983, after a 2-year post-doc at the MPI for Psychiatry in Munich where he had been focusing on knowledge representation. He continued this focus at TUM; the intellectics group was developing knowledge representation tools for airplane design as part of the ESPRIT consortium LOKI.¹ Staying in Munich at the TU, Christian moved from the LOKI project to a post-doc position with Wilfried Brauer between 1986 and 1991. Brauer had established a group on AI and cognition, which combined very well with Christian's interests; his cognitively oriented line of AI research had initially not received as much attention as he might have liked. (While in Bauer's department, Christian also connected parts of the TU to the ARPAnet.)

During several research visits to the International Computer Science Institute in Berkeley, Christian began to develop his ideas for temporal and spatial reasoning. These ideas formed the core of his later research, which he conducted first at the University of Hamburg (where he held a professorship for knowledge and language processing between 1991 and 2002) and then at the University of Bremen. At Bremen, Christian was Research Professor of Cognitive Systems at the Faculty of Mathematics and Informatics and since 2003 Director of the newly established

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¹ ESPRIT is short for the "European Strategic Programme for Research in Information Technologies"; LOKI was the acronym for "A logic-oriented approach to knowledge and data bases supporting natural user interaction".



Fig. 1 Christian Freksa (1950–2020). Photograph by Rudolf Seising



Fig. 2 Christian Freksa discussing the history of AI with Helen Piel and Jakob Tschandl. Inner courtyard of the Deutsches Museum in Munich, 31 July 2020. Photograph by Rudolf Seising

Spatial Cognition Center. His research interests in representation, spatial cognition, and more occupied Christian until his sudden death.

Over the years, Christian was also engaged in several professional bodies. In the 1980s, he was spokesperson for the working group Cognition (Arbeitskreis Kognition) in the German Informatics Society (Gesellschaft für Informatik, GI). He was also a fellow of the European Association for Artificial Intelligence (EurAI) and a member of the Cognitive Science Society; in 2019, he was one of the co-chairs of the latter's 41st Annual Meeting in Montreal, Canada.

During his career, Christian was in charge of many scientific projects. Among others, he coordinated the DFG-funded Spatial Cognition Priority Program (1991–2002) and led two of its projects, one on Aspect Maps (1996–2002) and the other on Spatial Reference and Spatial Inference (1999–2002). Christian was also responsible for the project Qualitative Knowledge about Space and Time: Representations and Processes (DFG, 1998–2002) and two National Research Programs on Spatial Cognition (SFB/TR8 on Reasoning, Action, Interaction (1996–2014) and the DAAD-funded International Quality Network on Spatial Cognition).² A list of selected publications can be found here: https://bscc.spatial-cognition.de/publications_freksa

In 2006, Christian organised the symposium “50 Jahre Künstliche Intelligenz” as part of the 29th Annual German Conference on AI, “KI 2006”, in Bremen. Recently, he had become more deeply interested in historical engagement with his disciplines and cooperated with “IGGI”, our research project on the history of AI and cognitive science based at the Deutsches Museum in Munich (Fig. 2).³ We have lost a good friend and supporter of our project and ourselves.

² For a recent interview with Christian, see Seising, Rudolf (2019). Interview with Prof. Christian Freksa, Ph.D. *Archives of Soft Computing* 2/2019, 3–25 (https://www.unipapress.it/it/book/aphsc-2-2019_214/).

³ IGGI – Ingenieur-Geist und Geistes-Ingenieure: Eine Geschichte der Künstlichen Intelligenz in der Bundesrepublik Deutschland (<https://www.deutsches-museum.de/forschung/forschungsbereiche/wissenschaftsgesch/digitale-kulturen/ki-forschung/>).