

# HELMUT VEITH (1971–2016)

Thomas Eiter  
TU Wien  
thomas.eiter@tuwien.ac.at

Richard Zach  
University of Calgary  
rzach@ucalgary.ca

TU Wien and the Faculty of Informatics mourn the loss of Prof. Helmut Veith, who passed away on March 12, 2016 at the age of 45. He fell into a coma due to unforeseen complications following routine surgery; he died without regaining consciousness.

## Education and Career

Helmut Veith was born on February 5, 1971. After graduating from high school at the BG/BRG Tulln in 1989, Veith studied computational logic at the TU Wien and graduated in 1994. He received his doctorate in computer science in 1998, the promotion ceremony was carried out “sub auspiciis praesidentis” by the president of Austria, a rare honor indicating his immaculate academic record. Helmut Veith began his scientific career at the Institute of Information Systems, where he held a position as assistant researcher (Universitätsassistent) in the Databases and Expert Systems Group from 1995 onward. In 2001, he received the Habilitation, the right to teach at the university level, for the field of applied and theoretical computer science. Shortly thereafter, Veith accepted a position as associate professor (Professor C3) at the Technical University of Munich in 2003, which he held until 2007. From 2008 to 2009, he began building a large research group at the Technical University of Darmstadt, where he was full professor (Professor W3). He returned to the TU Wien in 2010, and was the inaugural holder of the professorial chair in computer aided verification.

Helmut Veith became interested in computer aided verification in the late 1990s after taking a guest lecture course in model checking given by Orna Grumberg. His interests expanded during a post-doctoral visit at Carnegie Mellon University in 1999/2000, supervised by Turing Award-winner Edmund M. Clarke, and funded by a Max Kade Fellowship. Prof. Veith’s subsequent work focussed on this area. He established a sustained and successful research collaboration with Prof. Clarke, and was named Adjunct Professor at Carnegie Mellon in 2005.

## **Awards and Memberships**

Helmut Veith was a leading researcher in the area of computer-aided verification, to which he made numerous contributions. He worked in particular on model checking for software and hardware, on abstraction tools, parametric questions in model checking, analysis and testing of computer programs, and in this context also on temporal logic. Two examples can serve as illustrations. The first is a path-breaking, outstanding article on the verification of systems using refined abstraction; it is universally known in the field as the “counterexample-guided abstraction and refinement (CEGAR)” method and has found applications in many areas outside as well. This work received the CAV Award 2015, an award that honours contributions of fundamental importance to the field of computer aided verification. The second is a paper on the verification of modular software, which received the ACM SIGSOFT Distinguished Paper Award in 2004.

Helmut Veith’s research interests, however, were not limited to verification. His wider interests included computer security and embedded systems, mathematical logic (especially fuzzy logics), the theory of databases, finite model theory, and complexity theory. He made significant contributions to each of these fields. He published his results in numerous papers in the most prestigious journals and conference proceedings. Due to his interdisciplinary approach to research, driven by curiosity and applications, Helmut Veith was well-known and admired in several research communities. This is reflected in his membership in many program and steering committees. In his main field of research, Helmut Veith was co-editor of the Handbook of Model Checking, the last volume of which is scheduled to appear this year, and co-chair of the CAV conference program committee in 2013 as well as of the FMCAD conference this year.

## **Contributions to the TU Wien and Science in Austria**

Following his return to the TU wien, Helmut Veith considered it his challenge to integrate and foster the significant existing potential in areas related to logic, such as databases, artificial intelligence, knowledge-based systems, automated deduction, with computer-aided verification. His aim was to bring these areas together under the banner of logic in computer science, and to make Vienna and Austria an international center for logic and verification. In this regard, his efforts to create an Austrian research network on “Rigorous Systems Engineering (RiSE)” have to be highlighted; the network has been funded by the Austrian Science Fund since 2011, and he served as its vice chair. At the TU Wien he co-initiated a doctoral college in logic in computer science. After its successful completion, it transformed into a doctoral program in “logical methods in computer science”, also

funded by the Austrian Science Fund beginning in 2014; Veith served as its director. This doctoral program made a substantial contribution to a restructuring of graduate training in the Faculty of Informatics. Other projects suggested or initiated by Veith have been the Vienna Center of Logic and Algorithms (VCLA), a platform for fostering national and international research and collaboration in the area of logic and algorithms, and the Vienna Summer of Logic, the largest event in the history of logic. This unprecedented conference united in one place a large number of the most important annual meetings in the areas of mathematical logic, logic in computer science, and logic in artificial intelligence, which enabled a broad exchange of research results. It was held in July 2014 at the TU Wien. The event, which was shaped in large part by Veith as its co-chair, was an enormous success and was received enthusiastically by the research community.

Helmut Veith not only excelled in his research and organisational projects. He was unflinching also in his dedication to the Faculty and its interests. He held a central role in the development and organization of the Faculty, where he participated in numerous working groups and committees. His inexhaustible creativity and his imagination showed new avenues. He proved this already as an undergraduate student through his development of the *studium irregulare* in “computational logic”.

Helmut Veith was an outstanding proponent of foundational research, but he also understood the importance of innovation and application. He was always open to cooperation with other disciplines. Currently an interdisciplinary project with the Faculty of Architecture, which Veith helped bring about, and which is funded by the Austrian Science Fund through the PEEK program, serves as further evidence of the wide horizon of his interdisciplinary thinking. He was going to contribute his own expertise in information design to this project.

## **Nurturing New Talent**

Teaching, learning, and nurturing new academic talent were a particular and important concern for Veith. He contributed to the design of masters and doctoral programs, and supervised numerous masters theses and dissertations, many of which received awards. He also supervised a number of post-doctoral researchers and supported their promising careers. He is appreciated especially by the numerous young scientists who received research awards thanks in part to his dedicated mentorship. Helmut Veith was researcher and teacher with heart and soul. With his death, the Faculty of Informatics and the TU Wien has lost one of its most outstanding and innovative leaders. The Austrian science community, and indeed the international computer science community, has lost a highly respected and influential member. He was also a well-rounded academic with interests, e.g., in

literature and performing arts.

Helmut Veith was a cooperative and open colleague and a very good friend to us all. His death leaves a void that will never be filled; we will miss him. It is incomprehensible that he would be taken from us in the prime of his life. He already created so many things, but there were also so many hopes. His work and legacy will be our mission.

The Faculty of Informatics at TU Wien will forever honor his memory. Our thoughts are with his family during this difficult time.