David L. Waltz, in Memoriam

Richard P. Gabriel, Tim Finin, Ron Sun

■ *David L. Waltz (1943–2012), was director, Center for Computational Learning Systems (CCLS), Columbia University, and a pioneer in the field of artificial intelligence. Waltz served as Association for the Advancement of Artificial Intelligence (AAAI) president from 1997 to 1999, was a Fellow of AAAI and the Association for Computing Machinery (ACM), a senior member of the Institute for Electrical and Electronics Engineers (IEEE), and former chair of the ACM Special Interest Group on Artificial Intelligence (SIGART). Prior to joining CCLS, he was president of the NEC Research Institute in Princeton, and from 1984–1993 was director of Advanced Information Systems at Thinking Machines Corporation and a professor of computer science at Brandeis University. A celebration of his life was held in the spring of 2012, and a symposium in his honor was held September 23, 2012, at Brandeis University in Waltham, Massachusetts.*

Dave Waltz began his career of creativity and collaboration after completing his dissertation in 1972 at the Massachusetts Institute of Technology Artificial Intelligence Laboratory (MIT AI Lab). That dissertation created the field of constraint propagation by showing that constraints and a rich but simple descriptive system were sufficient to recover three-dimensional information from a two-dimensional projection. Besides an education, Dave picked up a passion for the high-energy atmosphere that propelled the MIT AI Lab to prominence — an atmosphere that he spent the rest of his life re-creating.

In 1973, Dave Waltz with Richard P. Gabriel in tow headed west from MIT to the University of Illinois at Urbana-Champaign (UIUC) with the goals of starting a first-rate AI program and creating a lab in the image of the MIT AI Lab. All they had were an enthusiastic home in the Coordinated Science Laboratory, some friendly faculty in the Electrical Engineering department, a PDP-10, a shaky connection to the Advanced Research Projects Agency Network (ARPANET), and a small but eager coterie of misfit graduate students. Dave taught AI, and his passion and deep curiosity attracted top-notch visitors and more students; he and Gabriel fleshed out the computational infra-
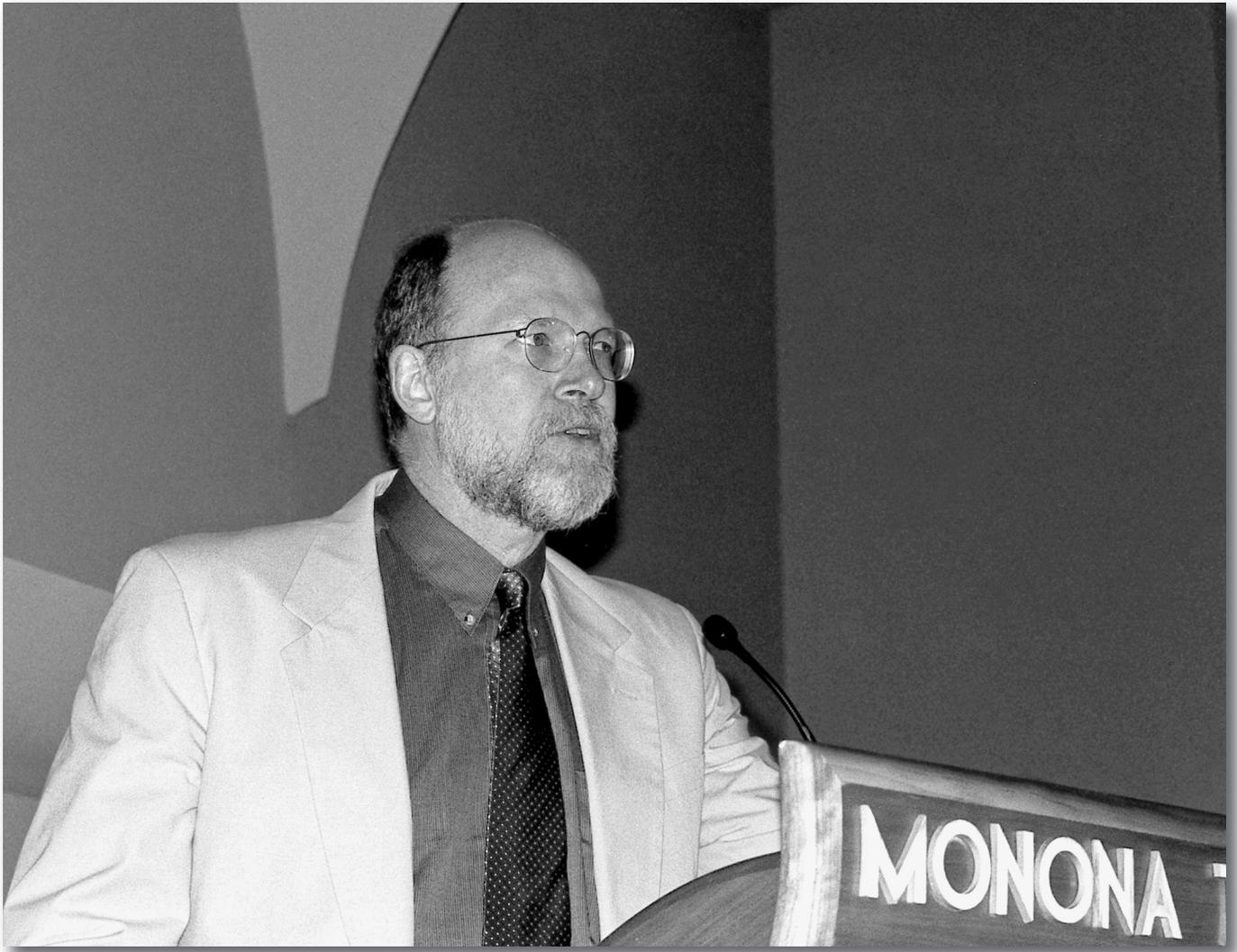
Dave Waltz delivers his AAAI Presidential Address at AAAI-98 in Madison, Wisconsin.

structure with a good Lisp system and tools; the two of them put together the proposal that led to the development of the Planes question-answering system, paving the way for an engineering-style approach to emergent AI techniques; and even though their first attempts to create a multidisciplinary AI degree program failed, Dave was able in the end to build a strong AI program at UIUC.

During the late 1970s and early 1980s, Waltz's group explored new ideas in natural language processing, cognitive science, qualitative reasoning, and parallel computation in a collaborative environment including researchers in computer science, linguistics, psychology, and electrical engineering. He chaired and brought the influential Theoretical Issues in Natural Language Processing conference to Urbana in 1978. In 1979, he spent a productive sabbatical year at BBN's Artificial Intel-

ligence Department along with his Ph.D. students Brad Goodman and Jeff Gibbons, who both ended up joining BBN. While at Illinois, Dave produced 11 Ph.D. students and many more MS students, mentored junior researchers and postdocs, attracted new AI faculty, and helped create the Beckman Institute for Advanced Science and Technology.

In 1984, Marvin Minsky asked Dave to return to Thinking Machines, Inc., an MIT spinoff in Cambridge — with the temptation that the atmosphere would be like the early days of the AI Lab all over again. At the same time he took a part-time tenured position at Brandeis. While at Thinking Machines and Brandeis, Dave developed the ideas of massively parallel AI and, with Craig Stanfill, the memory-based reasoning approach to case-based reasoning.

Dave's efforts at Brandeis focused on fostering

interdisciplinary collaboration across labs, groups, and departments. In particular, he pushed for close collaboration between biology and computer science — what is now known as "computational neuroscience." He championed the establishment of an interdisciplinary research center — the Volen Center for Complex Systems. Waltz was one of those early researchers looking to neural networks, both biological and artificial, for solutions to AI problems. Graduate students responded to his enthusiasm, and he produced six more Ph.Ds. Dave's ongoing dedication to inter- and multidisciplinary collaboration inspired his students, many of whom went on to work in cognitive science, biologically inspired approaches to computation, and linguistics.

In 1993 Dave joined the NEC Research Institute where he led interdisciplinary work on memory-based reasoning, big-data analytics, and machine learning; he was its president from 2000–2002. He served as president of AAAI from 1997 to 1999. In 2003 he moved to Columbia University to establish and direct the Center for Computational Learning Systems, growing it to 30 researchers applying machine learning to large-scale business and government systems, reliability and security, human language technology, computational biology, and computer vision.

Dave touched many lives in his career and was known and admired for both his technical contributions and his personal qualities — he was generous, sharing, open minded, positive, optimistic, and interested in what other people were doing, thinking, and feeling.

We miss him deeply.

Richard P. Gabriel received a Ph.D. in computer science from Stanford University in 1981, and an MFA in Poetry from Warren Wilson College in 1998. He has been a researcher at Stanford University, company president and chief technical officer at Lucid, Inc., vice president of development at ParcPlace-Digitalk, a management consultant for several startups, a distinguished engineer at Sun Microsystems, and consulting professor of computer science at Stanford University. He is a researcher at IBM Research, looking into the architecture, design, and implementation of extraordinarily large, self-sustaining systems as well as development techniques for building them. Until recently he was president of the Hillside Group, a nonprofit that nurtures the software patterns community by holding conferences, publishing books, and awarding scholarships. He is on Hillside's Board of Directors. He is the lead guitarist in a rock 'n' roll band and a poet.

Tim Finin is a professor of computer science and electrical engineering at the University of Maryland, Baltimore County (UMBC). He has more than 30 years of experience in applications of artificial intelligence to problems in information systems and language understanding.

Finin received an S.B. degree in electrical engineering from MIT and a Ph.D. degree in computer science from the University of Illinois at Urbana-Champaign. He has held full-time positions at UMBC, Unisys, the University of Pennsylvania, and the MIT AI Laboratory. Finin has chaired the UMBC Computer Science Department, served on the board of directors of the Computing Research Association, been an AAAI councilor, and chaired several major research conferences. He is currently editor-in-chief of the Elsevier *Journal of Web Semantics*.

Ron Sun is a professor in the Cognitive Science Department at Rensselaer Polytechnic Institute. He received his Ph.D. from Brandeis University in 1992. His research interests center around the study of cognition, especially in the areas of cognitive architectures, human reasoning and learning, cognitive social simulation, and hybrid connectionist-symbolic models. He published many papers in these areas, as well as nine books, including *Duality of the Mind* and the *Cambridge Handbook of Computational Psychology*. Sun is the founding coeditor-in-chief of *Cognitive Systems Research,* and is on the Governing Board of the Cognitive Science Society and the Board of Governors of the International Neural Network Society (serving as president of INNS from 2011–2012. He received the 1991 David Marr Award from Cognitive Science Society, and received the 2008 Hebb Award from the International Neural Networks Society.