MODERN BIOGRAPHY
ANDREW STUART TANENBAUM

By Behram Dossabhoy, Computer Science '21

Andrew Stuart Tanenbaum was born to Jewish parents in New York City on March 16, 1944, and grew up in nearby White Plains, New York. He graduated from White Plains High School in 1961 and went on to receive his bachelor's degree in physics at the Massachusetts Institute of Technology in 1965. He then received his doctoral degree in astrophysics from the University of California at Berkley in 1971 with a dissertation titled A Study of the Five-Minute Oscillations, Supergranulation, and Related Phenomena in the Solar Atmosphere. After finishing his education, Tanenbaum moved to the Netherlands with his Dutch wife where he taught computer science courses (namely those focused on operating systems) at Vrije Universiteit Amsterdam (VU Amsterdam) until he retired in 2014.

Tanenbaum is best known for his MINIX, or mini-Unix, operating system. He single-handedly developed MINIX in 1987 to supplement his textbook, Operating Systems: Design and Implementation, to teach his students how operating systems work. AT&T forbade the teaching and instruction of the UNIX internals—claiming that UNIX was its intellectual property—so developing his own version of the operating system for teaching made sense, as free operating systems weren't common then.

In addition to teaching, he developed MINIX to challenge how operating systems were built. Since MINIX was built on an unconventional microkernel, it provided better security and reliability than other operating systems—such as Linux—which was built on a monolithic kernel. Most modern kernels use a hybrid design, including some elements of microkernels without going as far as they would. Back when it was first released, MINIX was cheaper than many UNIX-based operating systems, making it popular among students, hobbyists, and developers. However, because of its original proprietary licensing, it would be overshadowed by operating systems released under free licenses. Now, MINIX has changed its direction in development. The third revision of MINIX supports low-end, low-resource devices, while focusing on security, reliability, and mobility.

Tanenbaum worked on smaller projects, too, such as:

- The Amsterdam Compiler Kit: a toolkit developed for producing portable compilers,
- Amoeba: a distributed operating system developed as a timesharing system that allows a single user to interact with an entire network of computers that all show up as a single machine,
- Globe: a wide-area operating system, and
- Electoral-Vote.com: A website that analyzes opinion polls for national U.S. elections to predict the outcomes. The website is still functional and is running for the 2022 midterm elections.

During his time at VU Amsterdam, Tanenbaum hosted several doctoral and master's degree students, many of whom have gone on to make their mark on the computing world. Former students include Werner Vogels, Amazon's Chief Technology Officer and Leendert van Doom, a distinguished engineer at Microsoft. He was also the first dean of the Advanced School for Computing and Imaging (ASCI) in the Netherlands, which he helped cofound in the early 1990s. ASCI was an endeavor spearheaded by the Dutch government to help connect multiple research-oriented universities to work on problems in the field of advanced computer systems.

Tanenbaum is a fellow of the Association of Computing Machinery (ACM), a fellow of the Institute of Electrical and Electronics Engineers, and a member of the Royal Netherlands Academy of Arts and Sciences. He has also garnered thirty-one awards, the most recent being the Lifetime Achievement Award from European chapter of the ACM Special Interest Group on Operating Systems, which he received in 2015.