Liskov was born November 7, 1939 in Los Angeles, California, to a Jewish family, the eldest of Jane and Moses Huberman's four children. She earned her BA in mathematics with a minor in physics at the University of California, Berkeley in 1961. After she graduated, she applied to graduate mathematics programs at Berkeley and Princeton. At the time Princeton was not accepting female students in mathematics. She was accepted at Berkeley but instead of studying she moved to Boston and began working at Mitre Corporation. She worked at Mitre for one year before taking a programming job at Harvard where she worked on language translation.

She then decided to go back to school and applied again to Berkeley, but also to Stanford and Harvard. In 1968 she became one of the first women in the United States to be awarded a Ph.D from a computer science department when she was awarded her degree from Stanford University. At Stanford she worked with John McCarthy and was supported to work in artificial intelligence. The topic of her Ph.D. thesis was a computer program to play chess endgames for which she developed the important killer heuristic, which improves exponential search time to find the optimal next move.

After receiving her PhD, Barbara married Nathan Liskov and moved back to the Boston area to work at the Mitre Corporation in Bedford, MA on computer design and operating systems.

BREAK TO THE SLIDES

Liskov has led many significant projects, including the Venus operating system, a small, low-cost and interactive timesharing system; and Thor, an object-oriented database system. With Jeannette Wing, she developed a particular definition of subtyping, commonly known as the Liskov substitution principle. She leads the Programming Methodology Group at MIT, with a current research focus in Byzantine fault tolerance and distributed computing.

Liskov created the Venus operating system at Mitre right out of college. Using an Interdata 3 computer that had the ability to change the instruction set via microcode, she created the “Venus Computer” tailored to supporting the construction of complex software. The [Venus operating system](https://dl.acm.org/citation.cfm?id=361272) was a small timesharing system for the Venus machine used to experiment with how different architectures helped or hindered this process. The Venus system supported 16 teletypes and each user was connected to a virtual machine so that major errors would not compromise the entire system, only the virtual machine for that user.

Her MIT group also created the [Argus](https://en.wikipedia.org/wiki/Argus_%28programming_language%29) language, which extended the ideas of CLU to ease implementation of programs distributed over a network, including support for nested transactions. An example of such a distributed program might be a network-based banking system. Argus provided object abstractions called “guardians” that encapsulate related procedures. As an experimental language, Argus influenced other developers but was never widely adopted or used for deployed networked applications.

Liskov is currently the Ford Professor of Engineering at MIT. She leads the Programming Methodology Group at MIT, with a current research focus in Byzantine fault tolerance and distributed computing. She became a full professor at MIT in 1980. She served as the Associate Head for Computer Science from 2001 to 2004, and in 2007 was appointed Associate Provost for Faculty Equity. In 2008, MIT named her an Institute Professor, the highest honor awarded to an MIT faculty member. The objective of Byzantine fault tolerance is to be able to defend against failures of system components with or without symptoms that prevent other components of the system from reaching an agreement among themselves, where such an agreement is needed for the correct operation of the system.