

Focus on an Individual: Seymour Cray

"Seymour Cray is the most outstanding high-performance scientific computer designer in the world."

Gene Amdahl

Thus, it is appropriate that Cray is the first individual that is featured in this exhibit. The intent is to change the exhibition on a yearly basis, selecting people that represent various aspects of information processing: languages, applications, entrepreneurship, and even use.

The 33-year-long career of Seymour Cray illustrates the progress of computing. He has achieved this status through practicing a unique philosophy combining a small and isolated work force, with a simple logic and circuit design. His fame and self-imposed isolation have created an aura of myth around him. The exhibit traces Cray's career by means of a combination of artifacts, photographs, and a video tape of Cray giving a lecture.

Seymour Cray was born in 1927 in Chippewa Falls, Minnesota. The son of a city engineer, Seymour exhibited an interest in science in high school. After graduating in 1943, Cray entered the military where he worked repairing radios. After WW II he went on to earn his Bachelor's degree in electrical engineering at the University of Minnesota in 1950, and a Master's in Applied Mathematics a year later. One of his professors recalls how Cray "had the almost uncanny ability to see through all the possibilities . . . and arrive at the [best] solution."

In 1951, Cray went to work for Engineering Research Associates (ERA), a Saint Paul, Minnesota computer company founded in 1946. He was instrumental in the production of the ERA 1103, which, when it was announced on February 5, 1953, was one of the first commercially-available computer systems. After Remington Rand Company bought ERA, Cray stayed on as a principle designer of the unit computer of the Naval Tactical Data System (NTDS), a weapons control system designed under contract for the Navy. The first NTDS computers, completed in late 1957, were some of the first fully-transistorized computers. Serial number one of the heavily-armoured NTDS computers is on display in the exhibit.

According to Cray, "My story really starts with the beginning of Control



Data." In 1958 Cray left Remington Rand Univac to join a group of his former ERA colleagues who had formed Control Data Corporation. At Control Data, Cray commenced work on a low-cost, high-speed, powerful computer for scientific computation. To test the soundness of his logic and circuit design, Cray produced the Little Character. This machine, also on exhibit, served as the prototype for Control Data's first product, the 1604 computer system, named to represent its 16 thousand words of memory and 4 tape drives. Cray continued to pursue his inclination toward the design of large and fast systems for the forefront of computing.

On August 22, 1963 Control Data announced the 6600. This computer, designed by Cray, James E. Thornton and a handful of others in a remote laboratory which Cray had built in his home town of Chippewa Falls, was the most powerful computer of its time. It was three times faster than IBM's Stretch computer, yet a fraction of the size and cost. The 6600 exemplified many of Cray's design philosophies. For instance, its relatively small size reflects Cray's tenet that to make a computer fast one must make it compact. Half of a 6600 makes an impressive center-piece to the exhibit. On December 3, 1968 Control Data announced the successor to the 6600. The 7600 was 5 times faster than its prede-

Seymour Cray and John Rollwagon, President and Chairman of Cray Research, stand next to a prototype of the CRAY-2. To keep its components cool, the entire CPU will be immersed in inert fluorocarbon, the substance used for artificial blood.

cessor and cost only twice as much. A set of notes on the operation of the 7600 written by Cray is enshrined in a plexiglass case in the exhibit. It encapsulates many of Cray's design philosophies; earning it the nick-name "Seymour's Bible."

In 1972 Cray left Control Data to form his own company: Cray Research Incorporated. After four years of work, Cray Research delivered the Cray 1 to the Los Alamos National Laboratories in early March, 1976. Its radical design and \$8 million price tag led some to call it "the world's most expensive loveseat." A section of the Cray 1 is on exhibit at the Museum. Above it is a large image of the computer which was generated by a Cray 1 computer, illustrating the use of the large computers for graphics and entertainment applications as well as the large-scale number crunching.