

Mr. Wen Tsing Chow
Inducted 2004



Mr. Wen Tsing Chow was born in Taiyuan, China, near the Mongolian border in 1919. He received a Bachelor of Science degree in electrical engineering from Shanghai Jiatong University in 1940 and a Master of Science from the Massachusetts Institute of Technology in 1942. His master's thesis, titled "The Study of Selsyn Machines," dealt with what are commonly called closed-loop control systems or servomechanisms. As a natural extension of the latter, General Electric employed him during World War II to redesign anti-aircraft fire control systems based on intelligence about the Japanese Zero.

Working for Arma Division of the American Bosch Arma Corporation during the 1950s, Mr. Chow managed the design, development, and production in quantity of the digital computer and all-inertial guidance system for the Atlas (WS-107A) intercontinental ballistic missile (ICBM). In 1951, he conceived an inertial guidance system to automatically navigate space vehicles, and he went on to formulate the design of the first all-solid-state, high-reliability, space-borne digital computer as well as to establish the basic systems approach to development and mechanization of guidance systems for ICBMs, space boosters, and manned spacecraft from Atlas, Titan, Saturn, and Skylab, through Minuteman and the Space Shuttle.

During 1956-1958, Mr. Chow presented or published several important papers on missile guidance systems, including one titled "Design Philosophy of Airborne Transistorized Digital Computers for High-Speed Long-Range Ballistic Missiles" at the First Symposium of Ballistic Missiles in 1956. The first successful flight test of his guidance system occurred on 8 March 1960 from Cape Canaveral. Mr. Chow held a fundamental patent on programmable read-only-memory (PROM), which he invented for the Atlas E/F airborne digital computer. His pioneering use of photochemical circuitry allowed for miniaturization of guidance system computer

components, established as a given the use of digital computers in missiles and spacecraft, and paved the way for further microminiaturization that is used in so many other modern products.

With Aerospace Corporation during 1964-1967, Mr. Chow worked on computer and guidance issues associated with the Minuteman III ICBM. In a broader context, he was responsible for guidance and control, radar and communications, computers and data processing design efforts for numerous strategic weapon systems. In addition, he played a key role in verifying the guidance equations and their software implementation for NASA's Gemini program. At IBM Corporation from 1967 to the late 1970s, he served as "scientific advisor" on design of the Saturn V/Apollo guidance computer, as well as on Skylab and Space Shuttle systems, thereby advancing IBM's expertise in space-borne computers and electronic systems, fault-tolerant computers, magnetic domain (bubble) storage technology, and electro-optical (fiber optic) communication systems.

He later consulted with Kollmorgen Corporation on a miniaturized electronic interconnection system and with Western Union on satellite communication systems. As managing director of the American Society of Mechanical Engineers during the 1980s, he focused on industrial competitiveness and attempted, with Nobel laureate Wassily Leontieff, to develop an economic model for the return on investment from research and development. Mr. Chow died in June 2001.