

Sunlin Chou, Pioneer in Intel's Technology and Manufacturing Group, Passes Away

On December 5, Sunlin Chou, former Senior Vice President and General Manager of Intel's Technology and Manufacturing Group, unexpectedly passed away. He retired from Intel in 2005 after serving for 34 years. Sunlin was just 72 years old and is survived by his wife Priscilla.

Sunlin was known as a brilliant technologist, and as a great, selfless leader with unmatched integrity and calmness while still possessing a no-nonsense attitude. Though many will remember him as a tireless driver of Moore's Law, people will also remember his humor, humbleness and accessibility. (You can read a wonderful TMG remembrance of Sunlin, created by Larry Wong, Jennifer Davies and Doris Burrill, [here](#).)

Former Intel CEO Craig Barrett remembered Sunlin as "...absolutely the best results achiever of anyone I have known at Intel." He noted that "Sunlin and (his) team did an outstanding job over three decades. He kept us one or two generations ahead in the marketplace, and Intel prospered accordingly. He was a joy to work with (I loved his understated manner) and we mourn his passing."

Sunlin was also a strong contributor to the industry as he chaired the management board of the EUV (Extreme Ultra-Violet lithography) LLC, an effort that combined top scientists from U.S. government labs, top academic institutions and private industry to develop EUV lithography for semiconductor manufacturing. He also chaired the Semiconductor Research Corporation (2000-2004), was elected to the National Academy of Engineering in 2004, and named to the VLSI Research Hall of Fame in 2006. Sunlin and Intel's Youssef A. El-Mansy were named co-recipients of the IEEE Robert N. Noyce Medal in 2013.

In 2002, Sunlin was named to the *Scientific American 50* as one of the world's top technologists.

Away from work, Sunlin was a renaissance man. He was an expert classical guitarist, excellent photographer, a gifted chef, and the lead designer of his home (he had considered architecture as a possible field of study as a young man before choosing electrical engineering). He and his wife Priscilla loved to travel and experience the outdoors as they fly-fished and rafted the Colorado River, became certified SCUBA divers and participated in several cross-country bike tours throughout the world.

Yet, all of these accomplishments (IMHO) fail to highlight how important Sunlin's contributions were to Intel employees (former and present) and Intel stockholders.

In the early days of Intel, the company was known for its innovation. Wonderful new products such as the first commercial DRAM, the EPROM and of course the microprocessor, as well as the reputation of its founders Bob Noyce, Gordon Moore and Andy Grove, put a spotlight on Intel. But the way Intel made its money was by selling the products it built.

In the early 1980s, with the industry in its infancy, Intel and the industry in general were poor manufacturers. Low yields, questionable quality and unpredictable supply were the standards of the day. So much so, that semiconductor customers demanded that companies (such as Intel) have licensed second sources that could also build the same products (so the supply could be more reliable). This approach also created instant competitors which depressed pricing and Intel profitability.

This approach changed with the introduction of the 386 microprocessor. Intel decided it would sole-source the product and all its support chips, thereby allowing the company to control pricing and profitability from the product. Intel hoped to be better able to recoup the product and process development costs as well as the cost of building new factories. If Intel couldn't supply the products, it would either be forced back into the prior business model, or lose customers to competing products.

Sunlin, along with Craig Barrett, Gerry Parker, Mike Splinter, Youssef El-Mansy and countless others in TMG had been strengthening Intel's manufacturing prowess building toward this moment.

A key piece of the strategy was a methodology called "Copy Exactly". The exact equipment, procedures, recipes, etc. that were used to create the process technology by the development team were duplicated without adjustment in the manufacturing fabs. In fact, a significant portion of the development team continued to "own" the process technology transfer into high-volume manufacturing. They had to transfer and assure that high-quality and high yield could be achieved and maintained before starting to work on future generations of process technology.

Sunlin helped create this program and oversaw its implementation throughout TMG. The "Copy Exactly" mantra permeated the TMG culture. Sunlin and his team also had to make sure that this wasn't a one-time occurrence but became the modus operandi for TMG permanently. The result was high-volume, high-yield, high-quality product from TMG, and because the 386 and future generations of Intel microprocessors became so popular, Intel's success and profitability soared. Intel transformed from an innovative design house to a world-class manufacturing company that could supply the rapidly expanding needs of an emerging personal computer industry. During the late eighties

and early nineties, Intel represented the majority of profitability for all of the global semiconductor market.

Sunlin Chou was a key cog in the development and execution of Copy Exactly, and the success of that effort was instrumental in the hyper-growth and success of Intel as it became the most successful semiconductor company in history.

Sunlin was as responsible for Intel becoming Intel as any of Intel's early pioneers.