Entrepreneurship

Silicon Valley's founding fathers

Surviving members of the group that made California a centre for innovation tell Chris Nuttall about the birth of the Fairchild family

Long before Brin and Page, Yang and Filo, and Jobs and Wozniak put their entrepreneurial stamp on Silicon Valley with Google, Yahoo and Apple, there were the "Traitorous Eight", the founding fathers of a company that became an industry and gave the Valley its name.

Fifty years ago this month, Julius Blank, Victor Grinich, Jean Hoerni, Eugene Kleiner, Jay Last, Gordon Moore, Robert Noyce and Sheldon Roberts formed Fairchild Semiconductor, the company that was to perfect the manufacturing process for silicon chips and invent the integrated circuit.

Old masters: Fairchild's Traitorous Eight in their heyday *Magnum*

William Shockley, the wayward co-inventor of the transistor, called them the Traitorous Eight, a label now viewed with affection, when they left his company, Shockley Semiconductor, en masse. Such departures were to become a regular occurrence in the Valley as Fairchild begat company after company of "Fairchildren" – 65 in all, including, most notably, Intel, founded by Mr Noyce and Mr Moore in 1968.

On a sunny October day at the Computer History Museum in Mountain View, a family reunion of sorts is taking place – founders and Fairchildren alumni are back in the heart of the Valley to reminisce on what it was like to work in this crucible of innovation 50 years ago and to consider the impact their inventions made on the world. Of the four surviving members of the eight, Mr Blank, Mr Last and Mr Moore are present, but Mr Roberts is unable to attend. They are joined by Arthur Rock, the financier who helped find funding for the company.

"There was no such thing as venture capital in those days. There was a little from Boston, but on the west coast there was essentially nothing," says David Laws, a British former employee of Fairchild who helped organise the reunion and is putting together a timeline for the museum.

Eugene Kleiner was the leader of the Traitorous Eight and sought the help of east coast bankers Mr Rock and Bud Coyle to find financial backing. Fifteen years later, Mr Kleiner would found Kleiner Perkins, a venture capital firm that would help Amazon, Google and Sun Microsystems become billiondollar companies and fund hundreds of other technology companies in a vital underpinning of the Valley's continued success. But, over breakfast in a San Francisco hotel, this seminal company raised just $10 initially as the eight and the two bankers each signed single dollar bills to share as a symbolic contract among themselves.

Raising further money proved difficult. Mr Rock approached more than 30 companies as potential investors before hitting on Fairchild Camera and Instrument, an east coast aerial camera company owned by inventor Sherman Fairchild. He agreed to provide a $1.4m loan, the terms of which included an option to buy the new company for $3m, which he soon invoked.

Mr Kleiner located a building in Palo Alto and, although the money had not yet come through, Fairchild Semiconductor was founded.

“It was the most interesting year of my life,” Mr Last says. “We went into an empty building in October 1957 and by next summer we had developed a product that scooped the industry.”

The product was a flat or planar chip, which made a virtue of silicon oxide that had been forming as an unintentional and unwanted coating on Fairchild’s chips. Mr Hoerni realised this could act as an insulator and prevent short circuits.

The flat chips that were produced enabled mass production and led to silicon superseding germanium as the base material.

Everything was being invented from scratch, from workbenches to how chips would be assembled.

“The people we hired for the most part had no experience at all of semiconductor work, and they came from the canning industry in the Santa Clara Valley – it was not known as Silicon Valley at that time,” says Bob Skurko, who was a foreman in the assembly room.

“We wound our own diffusion tubes, we pulled our own crystals, there were so many innovations that were coming out on a daily basis just to manufacture the product, so it was very exciting – you would go to work and find it hard to leave,” says Murray Siegel, the Traitorous Eight’s first employee.

The planar process led to Fairchild’s next great invention, the integrated circuit. Mr Noyce realised it would be possible for not just the transistor but capacitors and resistors – an entire circuit – to be etched on a single silicon crystal. Jack Kilby, a Texas Instruments employee, also made the discovery, but Fairchild proved more successful at exploiting it.

Mr Siegel says: “We were in a meeting where we came up with the idea of the circuit designs that would be integrated, the rest then became a progression and it was rapid, it was literally idea after idea after idea.

“When you look back, you say: ‘Gee, why in the heck didn’t Fairchild go ahead with all these different process technologies, why didn’t we set up individual businesses?’ That didn’t dawn on us, we were semiconductor people.”

While today there are chip equipment makers such as Applied Materials and every kind of semiconductor manufacturer, Fairchild was at the start of an industry and had the task of pursuing every avenue itself. It was inevitable that its staff would see opportunities that were better pursued by leaving and forming another company.

“We had these brilliant ideas but rather than making the stuff ourselves, we’d just as soon get it out to someone else . . . so, bit by bit, it moved out into the Valley and it helped the Valley mature,” says Mr Siegel.

In less than 10 years, Fairchild Semiconductor grew to 11,000 employees and made more or less all the profits of its parent company, Fairchild Camera, which became the best-performing stock on Wall Street.

“They owned the semiconductor business in the 1950s and 1960s, but it was run by people on the east coast that were conservative, did not put in the resources needed and did not incentivise the staff,” says Mr Laws.

Mr Fairchild chose to waste his protégés’ profits by diversifying into unsuccessful areas elsewhere. Staff were belatedly offered stock options, but the share price of the parent was so high as to make them worthless. “You were better off out of the door and into a start-up, where you could get 50 cent, 70 cent or dollar stock options,” says Mr Siegel.

And that is what Fairchild’s best talent did, heading out into the Valley and not looking back.

Mr Laws observes: “Although it went through its ups and downs, there was an extraordinary feeling of camaraderie. People were trying to do great things at Fairchild.”

‘Fairchildren’ who came to dominate the world of technology

Fairchild Semiconductor was already in decline in 1968 when Robert Noyce and Gordon Moore departed to form Intel, which was to become the world’s biggest chipmaker. They took key staff with them, including Andy Grove, a future Intel chief executive. Four others of the Traitorous Eight of 1957 – Jean Hoerni, Eugene Kleiner, Jay Last and Sheldon Roberts – had left in 1961 to form Amelco, a semiconductor company. Victor Grinich quit Fairchild in 1968 to teach at Stanford and Berkeley while Julius Blank left in 1969 to become a consultant. The dozens of companies formed by such “Fairchildren” include Intel, AMD, National Semiconductor, LSI Logic, Altera and Xilinx. Venture capital firms formed by exemployees include Kleiner Perkins and ‘Fairchildren’ who came to dominate the world of technology Sequoia Capital. Mr Noyce was a mentor to Steve Jobs, who in turn gave advice to Google founders Sergey Brin and Larry Page. As for Fairchild Semiconductor, it was bought by Schlumberger in 1979 and then sold to National Semiconductor in 1987. It became an independent company again in 1997, based on the east coast, and has been listed on the New York Stock Exchange since 1999.