
# An Historic Overview of Venture Capitalism



*Those who cannot remember the past are condemned to repeat it.*

—George Santayana

Why is an historical overview of VC important? Because history does in fact repeat itself, and a study of history allows us to frame an understanding of the present and the future. The players and the investment climate change, but the entrepreneur's innate instinct to risk capital for a return is no different today from what it was when John D. Rockefeller became America's first billionaire in 1900. When Andrew

Carnegie joined forces with his childhood friend, Henry Phipps, to form Carnegie Steel in 1892, they were driven by the same conviction to improve the status quo as are the idealistic dream chasers of the twenty-first century. It was these early trailblazers who paved the way and developed the techniques that have laid the foundation for VC as we know it today.

Arguably, historians will debate the nature of history and its usefulness. This includes using the discipline as a way of providing perspective on the problems and opportunities of the present. I believe it to be an important tool in providing a systematic account and window to the future. It is patently dishonest and irresponsible to perpetuate the popular mythology that those who created great wealth in America are to be despised and that there are no useful lessons to be learned from an objective, historical review of their contributions to the subject at hand. As John F. Kennedy said, "To state the facts frankly is not to despair the future nor indict the past. The prudent heir takes careful inventory of his legacies and gives a faithful accounting to those whom he owes an obligation of trust."[1]



## In the Beginning

On Sunday, May 23, 1937, John Davison Rockefeller, Sr., died just 46 days short of his 98th birthday. He left behind what is arguably the single greatest fortune ever amassed by a

single businessman. He began accumulating his wealth on September 26, 1855, when he became the 16-year-old assistant bookkeeper at Hewitt & Tuttle, a commission merchant and produce shipper in Cleveland, Ohio. Three years later, he left Hewitt and formed his own commission merchant house with his friend Maurice B. Clark, using money he had saved from his $25 monthly salary and $1,000 borrowed from his father at 10 percent interest. It was during this initial period of managing a business, struggling week to week to make weekly payroll, that he discovered his innate abilities to quickly size up an opportunity, evaluate the risk-reward, and negotiate a path forward. By December 1862, Clark & Rockefeller was a going concern, making more than $17,000 annually and occupying four contiguous warehouses on River Street.

That same year, the partners invested $4,000 of company profits with a chemist named Samuel Andrews. Andrews had developed a cost-effective method for distilling kerosene from crude oil. The partners built the Excelsior Oil Works and commercialized this process, providing a cheap and efficient means of lighting to the masses.

Rockefeller was able to buy out Clark in 1865 by borrowing funds based solely upon his business reputation. He went full-time into the oil business, building another refinery called the Standard Works. On January 10, 1870, the partnership with Andrews was dissolved and replaced by a

joint-stock firm named Standard Oil Company (Ohio). Sales of stock generated $1 million in capital and Standard oil controlled 10 percent of the nation's petroleum refining business.[2]

This business model served for many years as a fairly standard template for how businesses or *ventures* were formed and financed or *capitalized*. Business founders would use their own money and whatever money they could borrow from family, friends, and anyone else who would listen to their ideas for a new or improved business. The people who invested the early money usually did so based upon the founder's ability to sell them on the capability of the idea to solve a problem or provide a much needed service for which the public would clamor. This became known as *seed capital* and was usually less than $1 million. It was risky at best and often required early investors to wait until the enterprise was a profitable, going concern before they could realize a return on their investments. If a founder came up with a very good idea, he could sometimes gain financing from an *angel investor*. These were often wealthy individuals who would invest their own money into the enterprise in exchange for either some form of convertible debt, such as a 10-year bond which could be converted into stock or cash upon maturity, or in the form of a percentage of ownership of the new company or *equity*.

As all wealthy people quickly discover, the image of Scrooge McDuck romping and rolling around in his

private vault on piles of gold coins and bags of currency is only true in the make-believe world of comic books. Wealth will be depleted over time if not put to work. Taxes, inflation, expenses, and frivolous spending have caused more than a few lottery winners to end up in financial straits within a very few years. Enough stories abound about spoiled, entitled trust fund beneficiaries who completely squander their inheritances that there is an ageless proverb that says "there's but three generations from shirt sleeves to shirt sleeves." Money must be put to work by being invested, either in expanding one's own business or in someone else's venture.

## The Roots of Venture Capital

Carnegie Steel Company was sold to the United States Steel Corporation in 1901 for $480 million, of which about half went to founder Andrew Carnegie. The second-largest shareholder was Carnegie's partner, Henry Phipps. In 1907, Phipps formed Bessemer Trust as a private family office to manage his fortune. Four years later, he transferred $4 million in stocks and bonds to each of his five children and Bessemer Venture Partners was launched. It is regarded as the nation's first venture capital firm. According to the company's website (www.bvp.com), they currently manage "more than $4 billion of venture capital invested in over 130 companies around the world."[3]

Laurance Rockefeller inherited his grandfather's seat on the New York Stock Exchange in 1937 and wasted no time investing his inheritance in his passion, aviation. In 1938, he provided $3.5 million for Eddie Rickenbacker to purchase Eastern Airlines and invested in the McDonnell Aircraft Corporation. The Rockefeller Brothers Fund was founded in 1940 as a philanthropic foundation, to allow Laurance and his siblings a vehicle through which to provide grants that promoted the noble ideals of democratic practice, sustainable development, and peace and security around the world. Laurance supported the fund, but saw an opportunity to provide an investment vehicle for his siblings and other wealthy individuals. In 1946, he founded Rockefeller Brothers Fund, Inc., as a limited partner investment firm. The firm was one of the first to establish the practice of pooling capital in a professionally managed fund. In 1969, the company changed its name to Venrock Associates. Venrock has been one of the most successful venture capital funds and has provided early funding for startups of such Silicon Valley giants as Intel and Apple Computer. While Venrock's primary focus could be said to be firms involved with medical technology, they have spread their investments across biofuels, vehicle technology, mobile/social/digital media, software as a service (SaaS) and enterprise, and security.[4]



The post–World War II years saw rapid growth in this new style of development capital investing. John Hay "Jock"

Whitney, another scion of nineteenth-century American wealth, spent the 1930s and the early 1940s living the archetypical high society, polo-playing playboy lifestyle, investing his $100 million trust fund in the fledgling motion picture industry. In late 1945, Jock Whitney had an epiphany. He enlisted a fraternity brother named Benno Schmidt, a tall Texan with working-class roots, to be his business partner. J.H. Whitney & Company (JHW) was founded in 1946 to finance entrepreneurs who were returning from the war with great ideas, but whose business plans were less than welcome at traditional banks. Schmidt is often credited with coining the term *venture capital* as a replacement for *development capital*, although there are earlier uses of the phrase. One of Whitney's earliest and most famous investments was in the Florida Foods Corporation, later known as Minute Maid orange juice.

Today, JHW remains privately owned by its investing professionals, and its main activity is to provide private equity capital to small and middle-market companies with strong growth prospects in a number of industries including consumer, healthcare, specialty manufacturing, and business services.[5]

## The First VCs

The influence of Jock Whitney in the world of venture capital doesn't end with JHW and Minute Maid. In 1957, he recruited David Morgenthaler to serve as president and CEO of Foseco, Inc., a manufacturer of industrial chemicals in the

J.H. Whitney & Co. investment portfolio. Morgenthaler made the company a multinational success before stepping down in 1968 to go into venture capital himself. He founded Morgenthaler Ventures in Cleveland and Menlo Park. Forty-three years later, the firm is still going strong. Morgenthaler Ventures has worked with over 300 young companies, including dozens of biomedical startups. Morgenthaler also served as a founding director of the National Venture Capital Association (NVCA) from 1977 to 1979.[6]

The year 1946 also saw the launch of the American Research and Development Corporation. ARDC was the brainchild of Georges Doriot, a business professor at Harvard before the start of World War II. Upon enlistment, he was given the rank of Brigadier General in the U.S. Army and served as Deputy Director of Research at the War Department. Working in concert with U.S. Senator Ralph Flanders of Vermont and MIT president Karl Compton, Doriot developed financial vehicles that allowed private sector participation in the war effort through investments in the manufacture of weapons, equipment, and supplies. After the war, Doriot continued his partnership with Flanders and Compton in ARDC. It is often called the first actual venture capital firm because it was the first to raise funds from institutional investors: $1.8 million raised from nine institutions, including MIT, the University of Pennsylvania, and the Rice Institute. ARDC also became the first private equity firm to operate as a

publicly traded closed-end fund when it collected $1.7 million in a 1966 public offering. These innovations earned Doriot the moniker of "the father of venture capital."

Doriot's best move, however, was his 1957 decision to invest $70,000 with MIT engineers Kenneth Olson and Harlan Anderson to start the Digital Equipment Corporation (DEC). Following DEC's IPO in 1968, the value of ARDC's stake had grown to $355 million. The success gave an early boost to high-tech development along Boston's Route 128 and demonstrated the viability of the venture capital investment model. And, just like at J.H. Whitney & Company, ARDC employees went on to make their own mark in the world of venture capital. Bill Elfers had been the No. 2 employee at American Research & Development. When he left ARDC in 1965 to form Greylock & Co., he decided not to follow the restrictive public funding model. Instead, he operated as a limited partnership, now the typical structure for venture firms, and raised $10 million from six limited partners. A second fund followed in 1973, and last November, what's now called Greylock Partners announced it had closed the $575 million Greylock XIII Fund.[7]



## Shockley Chooses Silicon

The entire VC industry has evolved from these kinds of fraternal, sometimes internecine relationships of people being brought in to work at a firm and then deciding that they

would be happier on their own. There is no better illustration of this than the story of the Traitorous Eight.

William Bradford Shockley Jr. (February 13, 1910 to August 12, 1989) was an American physicist who co-invented the transistor along with John Bardeen and Walter Houser Brattain. All three were awarded the 1956 Nobel Prize in Physics. Shockley grew up in Palo Alto and did his undergraduate studies at the California Institute of Technology (Caltech). He moved to Boston to complete his PhD at MIT and immediately started working at Bell Labs upon graduation in 1936.

Despite his brilliance, Shockley was said to be "not terribly socially adept and didn't understand what motivated people very well."[8] An example of this is the story that he left Bell Labs because the company listed Bardeen, Brattain, and Shockley in alphabetical order on the transistor's patent; he felt his name should have been listed first because of the importance of his contribution. Whatever the reason, he returned to Caltech in 1953 as a visiting professor.

Shockley had become convinced that the natural characteristics of silicon meant it would eventually replace germanium as the primary material for transistor construction. Texas Instruments had started production of silicon transistors in 1954, and Shockley thought he could improve upon their developments. Arnold Orville Beckman, founder of Beckman Instruments and one of Shockley's few friends,

agreed to back Shockley's research in this area as a division of his company in Pasadena, California. Shockley's mother was in declining health at the time, and he wanted to be closer to her home in Palo Alto, so a compromise was worked out. In the summer of 1956, the Shockley Semiconductor Laboratory division of Beckman Instruments opened operations in a small building located at 391 San Antonio Road in Mountain View, California.

Shockley tried to hire some of his former workers from Bell Labs, but none of them wanted to leave the high-tech research corridor that was developing along Route 128 around Boston. Instead, he assembled a team of young scientists and engineers from the West Coast. They began researching a new method for producing a cylindrical arrangement of single-crystal silicon.[9]

## The Traitorous Eight

In October 1957, eight of these young and equally talented engineers reached the end of their ability to tolerate Dr. Shockley's management style. They quit the Shockley Semiconductor Laboratory and formed Fairchild Semiconductor in Mountain View. Legend says it was Shockley who branded them as "the traitorous eight" but it was really a moniker that was applied by a newspaper reporter several years later.[10]

Fortunately, the group was helped and guided by a young financier named Arthur Rock. Rock was a forward-looking

investment banker at the prestigious New York investment firm of Hayden, Stone. Rock believed technology was the future for investment and happened to know Sherman Fairchild of Fairchild Camera and Instrument (FCI) in New York. Fairchild was looking for technology companies in which to invest, and the timing was perfect.

Sherman Fairchild's father, George, was one of the original partners in the formation of the Computing Tabulating Recording Company. The company was later renamed IBM with Tom Watson as president. George Fairchild was that company's first chairman, and he and Watson owned an equal number of shares in the company. Fairchild died in 1924 with his son Sherman as the sole heir. When Watson died in 1956, his estate was divided between his wife and their four children. This left Sherman Fairchild as the biggest single owner of IBM stock. He sold some of it, which was the source of funding for the Fairchild Semiconductor start-up.

An interesting bit of trivia is that Fairchild Semiconductor was started with a $1.5 million investment by Fairchild Camera and Instrument. In return, FCI received an option to buy all of the stock that the eight held plus the stock held by Hayden, Stone for $3 million. The stock was divided by Arthur Rock so that each one of the eight got 10 percent of the stock and Hayden, Stone got the balance of 20 percent for putting the deal together. This is believed to be where the

80/20 model used in venture capital LP/GP deal structuring today originated.

It was also the first venture-funded *start-up company* in the Bay Area. The company made transistors out of silicon instead of the traditional germanium and established their facility in the Santa Clara Valley. That led to the name Silicon Valley being coined in the 1970s for all of the technology companies that were spun off of or related to Fairchild in that area.

The Traitorous Eight were Julius Blank, Victor Henry Grinich, Jean Amédée Hoerni, Eugene Kleiner, Jay T. Last, Gordon Earle Moore, Robert Norton Noyce, and C. Sheldon Roberts.

**Julius Blank** (June 2, 1925 to September 17, 2011) set up the machine shop and the initial assembly area at Fairchild. He was also responsible for establishing the subsequent offshore manufacturing facility in Hong Kong as sales soon outpaced the young firm's domestic capabilities. This was the precursor to the advent of offshore or *outsourced* manufacturing pioneered by VC tech companies. Blank also led the establishment of an entrepreneurial business model, which was to become the template for technology firms for the rest of the twentieth century: stock options, no job titles, and open working relationships. He left Fairchild in 1969 to become a consultant and co-founded Xicor in 1978. Xicor was subsequently acquired by Intersil Corporation in 2004 for approximately $529 million.

**Victor Henry Grinich** (November 26, 1924 to November 4, 2000) left Fairchild in 1968 to study computer science while teaching electrical engineering at UC Berkeley. He later taught at Stanford University as well. In 1975, he published the seminal textbook, *Introduction to Integrated Circuits*. In 1978, he was appointed CEO of Identronix, the company that pioneered radio-frequency identification (RFID) systems, used extensively in antitheft tags. In 1985, Grinich founded and became CEO of Escort Memory Systems to commercialize RFID tags for industrial applications. EMS was acquired by Datalogic four years later. In 1993, he cofounded Arkos Design, a manufacturer of emulators, which was acquired by Synopsys in 1995 for $9.3 million.[11]

**Jean Amédée Hoerni** (September 26, 1924 to January 12, 1997) was a silicon transistor pioneer remembered for developing the planar process for manufacturing semiconductor devices such as transistors. Along with Jay Last and Sheldon Roberts, Hoerni founded Amelco, which became Teledyne in 1961 in another Arthur Rock–funded acquisition. In 1964, he founded Union Carbide Electronics, and in 1967, he founded Intersil.[12]

**Eugene "Gene" Kleiner** (May 12, 1923 to November 20, 2003) was an Austrian-born American engineer and venture capitalist. In 1956, he was among the first to accept an offer from William Shockley to come to California to help form what became Shockley Semiconductor Laboratory. According to Arthur Rock, Kleiner led the eight who formed

Fairchild Semiconductor. Kleiner later invested his own money in Intel, a semiconductor firm founded in 1968 by fellow Fairchild founders Robert Noyce and Gordon Moore.

In 1972 Kleiner joined Hewlett-Packard veteran Tom Perkins to found Kleiner Perkins, the venture capital firm now headquartered on Sand Hill Road. In 1978, the company added Brook Byers and Frank J. Caufield as named partners. In full disclosure, Frank Caufield is a GCA shareholder, a close friend, and godfather to my daughter.

Kleiner Perkins was an early investor in more than 300 information technology and biotech firms, including Amazon.com, AOL, Electronic Arts, Flextronics, Genentech, Google, Hybritech, Intuit, Lotus Development, LSI Logic, Macromedia, Netscape, Quantum, Sun Microsystems, Verifone, and Tandem (which Wells Fargo Ventures had the good fortune to be a co-investor in). He retired from day-to-day responsibilities in the early 1980s.

Gene Kleiner is remembered for some of his notable observations about the venture capital industry. Although reserved, he often would make a statement that so adroitly summed up a situation that they became known as Kleiner's Laws. Some of his more notable quotes are:

"There is a time when panic is the appropriate response."

"The problem with most companies is they don't know what business they're in."

"Invest in people, not just products."

"Risk up front; out early."

The last one is considered the most strategically serious of Kleiner's Laws.

**Jay T. Last** (born October 18, 1929) is a physicist. He left Fairchild Semiconductor in 1961 as Head of Integrated Circuit Development. He then co-founded Amelco Corporation with Jean Hoerni and Sheldon Roberts, and served as Director of Research and Development. In 1966, Amelco was acquired by Teledyne Technologies, where Last was Vice President of Research and Development for eight years. In 1989, he founded The Archaeological Conservancy, which has preserved and protected over 150 archeological sites in 28 U.S. states. From 1982 to 2010, he was president of California-based Hillcrest Press, which publishes fine art books on the history of American painting. Last has authored or co-authored a number of art books.



It was Jay Last who best summed up why it is almost always more than a single great idea that leads to a successful enterprise. In an interview by Craig Addison of SEMI on September 15, 2007, Last pointed out how groundbreaking innovations are usually the result of the past efforts of many unsung researchers.

> . . . so much is based on past inventions and looking at what is practical to make rather than the key technical thing.

When Bo Lojek wrote his book [*History of Semiconductor Engineering*], I was asked to write a little testimonial on the back and this was a quotation that I had written for Bo for his book. "You and I agree that while the world loves a hero, semiconductor progress depended on the efforts and ideas of a large number of people and that moving forward depended on contributions going back a few decades in some cases. Also, as is the case with most inventions, a number of people with access to the same pool of common knowledge were working independently at the same time to put it all together and to make the necessary extensions to the existing technology and who realized that the time was right for society to accept the new concepts."

That says that nearly all technical progress is a group effort and always has been, and that was certainly true at Fairchild, and there were a lot of unsung heroes involved in all of these things.

With all of these things it wasn't, as I said earlier, an enormous leap forward in imagination. You sit down for a few minutes and you could visualize these things. The key question was what can we make? Every day we could come up with a dozen new great ideas of things we could do but

> the question was, one, could we make them? And, two, would the world buy them? So we were focused a lot more than a lot of the venture capital firms are today that think the world is going to pay them for being bright and having a bright idea. We learned quickly in those days that the world doesn't work that way.[13]

**C. Sheldon Roberts** (born 1926) is a semiconductor pioneer. At Fairchild, Roberts was responsible for silicon crystal production. He later joined Jean Hoerni and Jay Last to found Amelco.[14]

The last two members of the Traitorous Eight have unquestionably left their mark on the history of the human race. Dr. **Gordon E. Moore** (born January 3, 1929) is an American businessman who is known as The Chairman of Silicon Valley. He is also the author of Moore's Law, his 1965 observation that the number of transistors on integrated circuit boards (and thus, computing power) doubled every two years. His business partner, **Robert Norton Noyce** (December 12, 1927 to June 3, 1990), was nicknamed the Mayor of Silicon Valley.

In July 1968, these two men left Fairchild and co-founded NM Electronics with funding again provided under the auspices of Arthur Rock, who had joined Tommy Davis in 1961 to form Davis & Rock LP. A year later, NM Electronics changed its name to Intel Corporation.[15]

Noyce is credited (along with Jack Kilby) with the invention of the integrated circuit or microchip, which fueled the personal computer revolution and gave Silicon Valley its name. The relaxed culture that Noyce brought to Intel was a carry-over from his style at Fairchild Semiconductor. He treated employees as family, rewarding and encouraging teamwork. His follow-your-bliss management style set the tone for many Silicon Valley success stories.[16]

## Why Was the Venture Capital Method of Investing Chosen?

Capital for venture capital funds comes from a variety of sources. The economic boom that followed World War II saw developmental funding shift from the traditional purview of wealthy individuals and their family funds to more accessible venture capital and private equity firms. By establishing a fund that is aimed at a particular sector, venture capital firms provide a vehicle whereby qualified and institutional investors could put their money into enterprises that best represent their aims and goals.

By providing experienced management with respect to the establishment of specific funding criteria, diligently screening funding candidates, and the imposition of a professional management overlay, investors were assured that their money wasn't being wasted or squandered. More importantly, clear exit strategies were developed, and new ventures were guided toward liquidity events such as an initial public

offering (IPO) or sale of the company through a merger with another firm or acquisition by a firm in a related field (M&A).

The general partners (GPs, or the investment managers of the VC funds) at the "early stage" venture capital firm would aim for these liquidity events to occur within three to seven years after initial funding in order to allow the new enterprise to mature into a profitable business. Many firms have overlapping funds set up so that there is a continuous flow of diverse funding opportunities. In either case, the goal was for the VC fund to realize a return on investment (ROI) sufficient to allow the investor participants or limited partners (LPs) of the fund to (hopefully) realize a gain on their investment.

The technology and innovations that came to market in the 1960s and 1970s saw an entirely different breed of successful inventor or researcher turned wealthy investor. In the 1980s, computing became personal, phones became cellular, and words like "apple" and "windows" took on entirely new meanings. The 1990s brought us the World Wide Web, HTML, the Pentium processor, the smart pill, and Viagra.

This past decade saw the AbioCor artificial heart representing groundbreaking miniaturization of medical technology and an artificial liver invented by Dr. Kenneth Matsumura. The Braille Glove, wearable nanotechnology, translucent concrete, and a plethora of social media platforms, applications, and computer peripherals have appeared. All of them have required someone to believe in them enough to risk putting their money where their heart is.

Just when you thought you had seen it all, a new generation comes along and offers a fresh perspective or a radical new take on what we commonly refer to today as *disruptive technology*, another VC-coined term. The world is reinvented and recreated on a constant and ongoing basis thanks to venture capital. VC investors are anything but greedy and unfeeling; quite the opposite. They are visionaries. They are the guarantors of the future. And as many as there are and as varied as their investments are, there is always room for one more person who has the ability to see dreams and the patience to help them come true.

## Past Is Prologue

We opened this chapter by asserting that it is important to understand venture capital's long and storied past as a prerequisite for understanding today's climate and having insight into the future. I am hopeful that the historic anecdotes provided here give valuable insights that will help you appreciate that VC and its success are very much about people. There is no prescribed set of formulas adhering to an Austrian economics guidebook. There is no secret sauce. Time and time again, success has come down to one person getting to know the person across the table and developing the feeling that this was a person he could trust and someone he could invest in. And, as we have seen, history does often repeat itself, especially in the world of VC!