

HOWARD COX

Howard Cox (Greylock), HBS 1969, started his career in the Office of the Secretary of Defense in the summer of 1968 and continued there through 1971. Part of a small team assigned to help extricate the U.S. from Vietnam, Howard realized then that his ability to influence decisions within such a large organization was limited. He wanted instead to “build small organizations into larger ones, rather than vice versa,” so after finishing his service in government, he decided to pursue a career in venture capital. Howard joined Greylock, a private venture capital firm founded in Boston in 1965. He has been actively involved in healthcare, has served on numerous boards, and was a director of the Boston Globe when it was sold to the New York Times for over \$1 billion, the largest price ever paid for a newspaper. He described his experiences in venture capital in an interview at HBS in July 2001. Interviewer: Amy Blitz, HBS Director of Media Development for Entrepreneurial Management.

The Early Years

I’m the eldest of three. I was brought up in New York City and in a place called Westhampton Beach out on Long Island. My father was a lawyer and my mother was in the fashion design business; she had a building on 57th Street. Both my parents were professionals and both had an entrepreneurial spirit. My mother’s fashion design business certainly was an entrepreneurial venture. She had a number of people who designed dresses and then she sold them both wholesale and retail. My father, while he was a lawyer in New York, also did entrepreneurial things on Long Island. He did some real estate development, had some rental properties, and, for a period of time, leased and ran an airport.

Because of my parents, I was always encouraged from an early age to be somewhat entrepreneurial. I remember that at the end of the summer, when all the summer people were leaving Long Island, I would offer to clean out their garages and take all their soda pop bottles back to the store. The return deposit was two cents a bottle and this was big money for a seven- or eight-year-old. Also, when other kids were off learning to play tennis or other sports, I was often helping my parents with some of their various rental properties on Long Island.

Even when I was a very young child, my family gave me responsibilities related to money and making purchasing decisions. In the summers, I did all the shopping for a family of five. From that I learned to deal with money and how to pick values in a store. I even had to go back to the store and buy something else if I read the shopping list wrong. Doing the shopping was like running a small business so I guess you could say it was the start of my entrepreneurial adventures

Education

My parents put a high value on education. My family had several hundred years of history as lawyers. My father was a lawyer, two of my uncles were lawyers, and my grandfather was a judge. As a little kid, I always knew I was going to be a lawyer. No one told me I would be a lawyer; I simply knew I would be, just like some kids want to be doctors or firemen.

I wanted to be an international lawyer, so I went to Princeton so that I could be in the Woodrow Wilson School, which is a school for public international affairs. I also wanted to go to Princeton because of its flying club. I wanted to learn how to fly. I don't know why flying appealed to me. I developed an interest in it and then, while I was at Princeton, I became an instructor.

Being in the flying club was a somewhat entrepreneurial experience. We learned to fly for \$100 in an old plane the school owned. When I was head of the flying club, I went out and convinced some alumni to give planes to Princeton. My job was to figure out how someone could give the plane to Princeton and receive a tax deduction. At the same time, I had to make sure the flying club and not Princeton would control the plane. At the time, the marginal tax rate was 90 percent, so an alumnus could give a plane to Princeton and actually do better than if he sold the plane. During the course of my tenure, I arranged for the Princeton flying club to be given three planes. Also, we were not allowed to have a car, but if you were in the flying club you could have a plane. I used to get paid by my classmates to go pick up their dates from various colleges around the country. I had a lot of fun.

I went to Columbia for law school with a plan to practice law in New York City, as my family had always done. I was in the International Fellows Program at Columbia. Because I wanted to be an international lawyer, I spent two summers working in France and Spain to become conversant in French and Spanish. Then I went directly from law school to business school. I was still planning to practice law but I had met a lawyer on Wall Street who suggested that a business degree would be a big help to me. He specialized in Latin American law and said that he was really doing business things such as helping people set up plants and companies. I thought going to business school would be helpful and that it would make me a better lawyer.

Also, when I was in college I had done ROTC because at that time—the late 1960s, during the Vietnam War—everyone had a military service obligation. By doing the Army ROTC, I knew I would go on active duty once I had finished my schooling. So it was easy for me to go to law school and business school and extend my education rather than go on active duty. A lot of people didn't have that choice at the time because it was really a universal military service. But I also thought that going to business school was a part of preparing myself to be a better lawyer.

The HBS Experience

The HBS experience has probably been the most important part of my education since it is how I decided that even though I had joined the bar, I didn't want to practice law and that, once I had finished my military service, I wanted to do something in business. Of

course, I went to Harvard Business School planning to be an international lawyer. In fact, I think I was the only student at Harvard Business School who took the course Henry Kissinger was teaching across the river before he ended up going to Washington.

Even though there were very few entrepreneurial courses at Harvard Business School at the time, I became interested in doing something entrepreneurial, specifically in the new field of venture capital. Most people didn't know what venture capital was. If you were at a cocktail party and told someone you did venture capital, they didn't know what it was. I liked it because it was doing something involved with building small businesses. Although my interest in venture capital started at Harvard Business School, it was really my experience in Washington that convinced me to go into the field.

Early Career

While I was at HBS, it came time to fulfill my military service obligation. The best job one could have was working for Robert McNamara, who was an alumnus of the school. Many of us applied to work with him. My professor in my first-year statistics class was Chuck Christianson and I asked him how I could get assigned to work for McNamara during my military service. He told me to write a letter to the head of systems analysis at the Department of Defense. I wrote a letter and I had backing from Chuck Christianson and, I guess, some other professors. I was fortunate to be one of the two or three students in the summer of 1968 who received jobs in the systems analysis group.

During my second year at HBS, I commuted back and forth to D.C., doing a project for Professor Anthony, who had just come back from being controller of the Office of the Secretary of Defense. Professor Anthony was working on the five-year defense plan, looking at how to make some changes to the defense plan. I received a job offer early in the fall semester to work with Robert McNamara, who was then secretary of defense. When I actually arrived on the job, however, Nixon had been elected and Clark Clifford had replaced McNamara as secretary of defense. So when I returned to D.C., I joined a Republican Administration. Even so, the work we did in the Office of the Secretary of Defense was really non-political. In fact, when Kissinger came in, we handed him some work that we had done called National Security Staff Memorandum Number One, or NSSM-1, which was a memo prepared by our team in the Office of the Secretary of Defense Systems Analysis under the Johnson Administration on how to get out of Vietnam.

My job in the Office of the Secretary of Defense was still with systems analysis. At the time, the Department of Defense was the biggest employer in the world. In 1968 to 1969, there were 5.5 million people on the DOD payroll: 3.5 million people in uniform and two million civilians. The Office of the Secretary of Defense alone had 3,000 people. Within the Office of the Secretary of Defense, there was an Office of the Assistant Secretary for Systems Analysis, which had 100 people—fifty young people like me, straight out of school, and fifty career military people. The career military people were the best and the brightest of the military. By and large they had been the top of their class at West Point or Annapolis, typically a Lieutenant Colonel rank. For my job, I was paired with an experienced person. I was very fortunate to be on a team of seven or eight people who

were dedicated to looking at Vietnam. I spent my three years in the Office of the Secretary of Defense working on Vietnam and I even spent over a month in the country. I had a fabulous experience in terms of learning about big government and, in effect, big business. Part of what I learned, which convinced me to go into venture capital, is that it's very difficult to impact decisions in large organizations, particularly as a young staffer. On the other hand, if one is involved with small business, one is involved with growing things and can have a significant impact, even as a young person.

One of the things I did in my work on Vietnam was to prove that a certain type of bombing was totally ineffective. The bombing passes at the time were costing us about \$100 million a month, which in today's dollars would be \$300 million or \$400 million per month. There were other types of bombings that were very effective, but certain types were not. I believe I proved absolutely irrefutably that the bombing we were doing was wasting money. If you were the military commander in Vietnam, however, you didn't care what it cost because you weren't being evaluated on cost. In your mind, if spending \$100 million a month saved one American life, the cost was justified. You didn't see a choice in spending that same \$100 million on schooling or healthcare or something else. All you could control was whether planes bombed or didn't bomb. It's interesting to me that if one had been able to spend \$100 million in a different way, one could have had a much better, bigger impact. So you can see in this type of situation an example of how bad decisions are sometimes made in a large organization. The decisions make a lot of sense to the person deciding but the decisions do not make sense for the organization as a whole. This is, again, another reason I think one is more able to align good decisions and good results in a smaller organization. It was really my experience of big government that directed me towards looking at smaller organizations.

I did not directly experience Watergate or the end of the Nixon administration. I left Washington in 1971, before the 1972 election and Watergate. I was a young guy in the venture capital business in Boston by then. I have, however, been fortunate to have met and spent some time with a number of United States presidents and leaders of other countries. And one thing I've learned is that many of the leaders I've met have done great things but they've also had an Achilles heel. McNamara, for instance, did many wonderful things in changing the way the Defense Department is run—even today, it is run based on the principles he set up. But McNamara obviously made some serious mistakes, too, in terms of getting us into Vietnam and the prosecution of the war.

Finding the Opportunity

My attendance at Harvard Business School had been essential to getting the job in Washington. It was both my legal background and my business school background that qualified me.

The opportunity to work at Greylock came because of my acquaintance with a person who worked in the Office of the Secretary of Defense at the same time I did. That person went to work at Greylock after he left Washington and he called me about an opportunity after I had been in Washington for two years. My father thought that I would probably end up going broke in venture capital. He figured that since I, fortunately, had a law

degree, I could always go make an honest living as a lawyer after I had failed at venture capital.

When I went into venture capital in 1971, I think I got the only job in the industry in the United States. The thing that attracted me to Greylock was the group of people that was there. I was the fifth person who joined the company and there were five families that backed the company. One of the families was Tom Watson's from IBM. I was always a great admirer of his; he was one of my childhood heroes. Given his backing of the firm and my familiarity with the person I knew well from my days in the Pentagon, I felt the Greylock people were a very high-quality group. When I joined the firm, it had been in business for six years; the total commitment put up in 1965 was \$10 million and we still had \$2 or \$3 million dollars left of that original \$10 million. In comparison, Greylock invested \$300 million last year; we had twelve public offerings and eighteen mergers, and we're currently investing from a new fund that has \$1 billion in it.

When I went into venture capital, the emphasis was on the concept of building small companies. We weren't trying to create an information revolution. When I graduated from Harvard Business School, we still used a slide rule. We did not have calculators, let alone computers. When I went into venture capital, information technology was entirely dominated by IBM. Digital Equipment was the only other IT company and it concentrated more on the engineering side of the business. The result was that it was very hard to make information technology investments because IBM so dominated the field that there were no separate software investments. There also wasn't any genetic engineering.

Our objective in venture capital was to start and build small companies into big companies; we dealt with every industry, although there were probably fewer opportunities in information technology. Also, at that time there were very few venture capital firms and the firms were very small. Back then, everyone knew everyone else because we worked together. The money available for investing back then was small. In fact, there were some years when the whole industry invested only a few million dollars. We invested in a broad range of enterprises. For example, we had an investment in a chemical toilet company. At the time, there was a boom in recreational vehicles and we had to ask ourselves how we wanted to play a part in that industry. Well, every recreational vehicle had to have a chemical toilet so you couldn't really lose. Instead of betting on one vehicle manufacturer versus another, we looked at building the one company that would dominate the market for toilets in all the recreational vehicles. In another example, I was a director for a yellow pages company in Los Angeles. So, many of the investments venture capital firms made at the time were not in high technology.

Innovations at Greylock

Greylock was the first firm to have multiple limited partners. Prior to Greylock, there was American Research and Development, or ARD, which was a public company. We were fortunate that the founder of Greylock had spent eighteen years at ARD, where he was the number two person. He learned a lot there that benefited us. For instance, the people at ARD learned that you shouldn't invest in fish farms. They made one or two

investments in that area and lost all their money. To this day, we still hear from people who have new technologies to revolutionize food and grow fish but we've learned that fish is not something to invest in. Anyway, ARD was formed as a corporation, and it turns out that in the United States a corporation is not a good form from a tax and incentive point of view because there's double taxation. Also, the people who worked at ARD at the time could not receive direct options in the company. The correct form for our business was a partnership, and that's how Greylock was organized.

Another first at Greylock was that we had the backing of more than one family. At that time, other venture capital partnerships had the backing of only one family. For example, Whitney had the backing of Jock Whitney, and Payson and Trask had the backing of Mrs. Payson. Greylock had five families. Back then, venture capital was not corporate sponsored, so it was the wealthy families—often over generations—who were willing to take risks over a long period of time. Bill Elfers could have started Greylock with just one family, but his wisdom has proved itself. For example, when Mrs. Payson died, the Payson and Trask firm went out of business. So having multiple families was a very important innovation.

Another innovation Greylock had that other firms subsequently copied is the succession of partnerships. Historically, firms had been a single partnership that people came in and out of, whereas Greylock had an invested partnership. When the money from the partnership was invested, we went back to the same limited partners and got additional funds. Having a succession of partnerships with the same limited partners allowed the general partners to realign incentives within the firm. It also allowed the limited partners to decide if they wanted to put more or less money in.

Venture Capital Abroad

It's somewhat ironic that I was so focused on international pursuits throughout my entire educational experience and my time in the Department of Defense, and then I went into venture capital, which is a totally domestic endeavor. The United States has probably been the most successful place in the world for venture capital. We have the ingredients, which include education, money, a legal structure, a willingness to take risk, and a public offering market. All of these things have enabled venture capital and entrepreneurial companies to flourish in the United States and, generally, have not been present in other countries. Some components for entrepreneurial success have existed in other countries, but not all.

As a result, something that has been of great interest to me is to take on an emissary role by teaching the practices of venture capital in other countries. I have spent a lot of my vacation time visiting other countries in this sort of emissary role. I've gone to Japan, China, Thailand, Taiwan, and Singapore. In Europe, I've gone to Germany, England, France, Austria, and Poland. I've gone to Russia. In Latin America, I've gone to Argentina and Brazil. When I travel, I'm meeting with leaders in both business and government. I've tried to see whether or not there are opportunities for Greylock or for us to help them. I've concluded that for Greylock, it's best to focus entirely within the United States. I continue to believe that here is where the greatest opportunities lie.

I remember spending a day with a Japanese venture capitalist. I sat next to the head of the firm and in front of him was a row of desks with the most senior people closer to him and the most junior people farther way. I knew then that the environment is so totally different from the American environment that there would be no way for us to make good investments in Japan. The same is true in reverse. When the Japanese have tried to make entrepreneurial investments in the United States, by and large they have failed. So I believe venture capital is very much a local occupation. I think venture capitalists need an incredible level of local expertise. I do think, however, that the lessons from the United States are particularly suited for the developing world, where venture capital can be an engine for change. Of course, even in some of the more advanced economies, venture capital can be an important engine for change and the creation of economic values.

In my current role as chairman-elect at the National Venture Capital Association, I'm spending time speaking in other countries about venture capital. For example, I'll be in Australia in a few weeks to represent the United States at an annual venture capital convention. I look forward to doing the same in other countries as well. Still, I think the great opportunities in venture capital belong to those people who are very much a part of the local economy. That's because of how venture capital works. Take, for example, what happens when a new project comes in. First, I make a couple of phone calls and, through all my contacts, I find out about the entrepreneurs seeking financing from us. Generally, I or one of my partners will know people who know the entrepreneurs, and that way we're very quickly able to assess their abilities. Second, I talk to other people we know to get a sense of the market opportunity so that we understand whether or not the value proposition behind the new product or service will make it a winner and whether or not the market is big enough. If I tried to do this for entrepreneurs in another country where I haven't lived for a long time, it would be extraordinarily difficult.

Healthcare

The founder of Greylock had prior success at American Research and Development in healthcare and so, as early as 1971, we felt that healthcare was a very important part of the economy. Of course we were proved right since the industry grew over the next twenty years to become more than 13 percent or 14 percent of the economy today. Even with our focus on the healthcare industry, we covered everything in the early years at Greylock. I remember being a director of a graphics software company in San Diego, a yellow pages company in Los Angeles, and an automatic test equipment start-up in Seattle, all simultaneously. We were generalists at Greylock, which is different from today when venture capitalists are industry specialists. I think it would be presumptuous for any venture capital firm to say that it has the corner in any particular part of healthcare or any other industry. I think venture capital firms recognize opportunities and then move quickly to take advantage of them. For example, Greylock didn't have the first biotech firm, but we were willing to take advantage of the opportunity presented to us when Harvard told us about a couple of scientists who had some great ideas and started Genetics Institute.

The founder of Greylock asked me to pay particular attention to healthcare, so I ended up having more healthcare investments than my partners. I was fortunate to find companies that have become big over the years. Greylock's healthcare investing has been unusual in that we have been willing to invest in all aspects of healthcare. We've been willing to invest in products, services, biotechnology, and information technology for the industry. In addition, we've been willing to invest at all stages of a company's development. We've been willing to invest in start-ups, to invest for expansion, and to invest for buyouts. We've been this open in other industries as well.

Recognizing a Winner

In terms of recognizing a good opportunity, it's very difficult to say that you'll know a winner because there will be X, Y, and Z factors. I know people try to identify the one to three key factors that predict success, but I'm not aware of any great opportunity that had all of those factors. There is always something wrong with every idea or project or company that one looks at.

Looking at an opportunity is like looking at a painting or a Rorschach test. You see a whole lot of spots out there and you have to be able to say, "OK, this picture looks good." A key indicator to me is the value proposition. I ask, "Does the entrepreneur have something that is better and costs less than the current alternative?" Another thing I look at is whether the market is large enough that the entrepreneurial business can grow into a big company. I also consider the entrepreneur's flexibility. I want to be sure that he'll be committed to building the company rather than playing a particular role in the company. I like to know that he's not tied to being the CEO or Chief Technology Officer and that he's willing to listen to others and recruit for certain roles.

Within healthcare, there is an additional factor that I consider, which is payments. Healthcare is one of the few industries in which the consumer does not pay, because things are paid for by reimbursement from either private insurance companies or the government. No matter how fabulous a product is, if it isn't approved for reimbursement, it's unlikely to succeed in the marketplace. In healthcare, the glass is half full or half empty. If a new product isn't approved, you might have wasted many years of investment. What makes it even more risky is that it's often a bureaucrat at a reasonably low level who has enormous power over whether or not a product gets approved. On the other hand, if a product is approved, you have a barrier of entry for other people.

To find great opportunities, venture capitalists often contact the entrepreneurs. In the case of Genetics Institute, one of my partners was approached by Walter Cabot, the chairman of Harvard Management. Harvard was one of our investors and I believe that's the reason we were approached. Anyway, we go out and find companies that have been started, since historically venture capitalists invest in companies that have been running for some period of time. The companies might have only a few hundred thousand dollars in revenues and we contact the entrepreneurs and offer to provide additional capital, and perhaps experience, to help them grow their businesses. Really, we were making cold calls and I think that's still how it works. The venture capitalist identifies a particular entrepreneur and establishes a dialogue to see if they agree on an idea for going forward.

In venture capital, there is a lot of entrepreneurial activity on the part of the venture capitalist in terms of identifying people and ideas and knocking on doors to ask, “Are you interested?”

I think the reason most venture capital firms are partnerships is because of the way the process works. I think some of the best firms have partners at different ages with different experiences because that expands the network and makes it possible that when an idea comes in, one is relatively quickly able to determine thoroughly whether or not it’s an idea worth backing.

Early Personal Success

I was fortunate that the first investment I made on behalf of Greylock, which was twenty-seven years ago, has become a very large success. The company is called Stryker Corporation, an orthopedics company, which today has \$12 billion of market value. When we invested, it was a company that had been in business for many years and had \$7 or \$8 million in revenues. I contacted the owner via a cold call. The company was entirely owned by this one person. He had inherited it from his father. The business principally made powered surgical tools and a special type of stretcher and it was the leading company in its field. We offered to make a minority investment in the company and the owner indicated that he was open to us. The company did not need any money but he was hoping to grow the company faster and he wasn’t sure he ever wanted to go public. We began working with him and he said something that nobody else has ever said to me. He requested that a professional investor shareholder be involved. It’s the only time I’ve ever been involved with a company where the CEO or the founder asked us to take care of his family if something ever happened to him. In fact, two years later he was killed in an airplane crash. It’s almost as if he had a premonition that something would happen.

When the owner died, there were two of us from Greylock on the board. One was a more experienced partner name Charlie Waite. Greylock often paired a young guy like me with a more senior partner with lots of experience. Charlie was also a graduate of Harvard Business School and had worked at ARD. Anyway, we needed to recruit a new chief executive to run the company. We had put a board together and one of the other directors acted as the interim president since he lived in Kalamazoo where the company was based, and one of the other directors handled some of the legal repercussions that came up because the president of the company had been killed in a company airplane. At that time, the owner’s children were very young. I think we received an estate valuation on the company of \$6 or \$7 million dollars. I think that if Greylock had not been involved the company probably would have been sold for about that much money.

The keys to making the company succeed were first, recruiting a great president—a fellow named John Brown—and second, adding to the product line over time. Who to hire was obviously a board decision, but Greylock was responsible for finding the recruiting firm and recommending the candidates that the board could approve. We found an outstanding chief executive who has continued to this day. Next we had to help Stryker expand from its very small product area, powered surgical tools. Greylock played

a very critical role in getting the company into the business that has created great value, which is making artificial hips and knees. You see, another entrepreneur came to me looking for backing to start a company making artificial hips and knees. I told him that I didn't want to back him but that I would introduce him to Stryker because Stryker needed artificial hips and knees. I actually negotiated the deal on behalf of Stryker to get him to join the company. Artificial hips and knees is now a multibillion-dollar business, and it continues to grow. So Greylock played a critical role in getting Stryker into a much larger market.

Other Successes

Success has come from being in the right place at the right time. By that I mean that one is in a market or a space that's rapidly growing. The health maintenance organization, or HMO, is an example. HMOs were started in the early 1970s and, in some respects, have revolutionized healthcare. Well, I had made an investment in a Minneapolis company called Share and I was a director there. We were fortunate because the chief executives of both Share and United Healthcare were friends and wanted to do a merger. We facilitated the merger and the shareholders of Share ended up with 45 percent of the new company, also called United Healthcare. Greylock didn't stay on the board, but today the company has \$20 billion in revenue.

Another example of just being fortunate enough to be in the right place at the right time is when I was director of a company called CheckFree. CheckFree is the largest electronic payments company in the country, run in Atlanta. When we cold-called the company, CheckFree's founder was having a difference of opinion with one of his early backers. So Greylock and one other venture capital firm bought the early investor's stock. The company has been a great success. It moved from Columbus, Ohio, to Atlanta. Several of us at Greylock had been directors for brief periods of time, but we did not maintain a long-term involvement there like we have done with Stryker Corporation.

Lessons Learned

This is my thirtieth year in venture capital and I've spent all these years at Greylock. I've been fortunate since we've lost money on only two companies I've been involved with. One of them was a start-up automatic test equipment company in Seattle called Summation. They were a terrific group of guys with great ideas. The concept they came up with was to use the power of the PC to do what larger test equipment companies were using discrete components to do, and all at a much lower cost. Unfortunately, our timing was a little too early. The test equipment business, which is a cyclical business, was in a downturn when we got going. I worked on Summation for a period of nine years and, at the end, it was a great triumph that we were able to sell the company and receive enough money to pay off the bank debts and find jobs for all the people in the company who wanted jobs. In fact, many of the people from Summation have gone on to success in other companies. I'd back the same group of people again.

The lesson I learned from my experience with Summation is that no matter how great an idea or how good a group of people, timing and market conditions have to be right. In fact, there are times when average management teams and average products can do very

well simply because the particular market they are entering is growing at a very fast rate. As they say, a rising tide lifts all ships. So, no matter how much research one does—and we did a lot of homework on Summation—you can't always predict the economy. Automatic test equipment was in the doldrums for a long period of time. Over the last two or three years there was a huge growth in automatic test equipment, but now it's on a down cycle again. Look at what has happened to orders at Teradyne and other companies. They've gone from hundreds of millions of orders to zero. So, there are cycles, and if one is unfortunate enough to be on the wrong side of a cycle, a company and a product won't succeed, no matter how good the team or the idea is.

The second failure I've been involved with was a New Jersey company in the audiovisual equipment area. It was a company that was up and running and I had actually turned it down already. Then a friend of mine in another venture capital firm negotiated a deal and told me, "You can't lose money on this deal." As he explained it, the company had one product line that was on the decline and another product line that was on the increase. Unfortunately, the product line that was on the downswing went down a lot quicker than the product that was on the upswing and the company had a lot of inventory and receivables. One of the lessons from that experience is that when you identify all the problems in a company, never fail to question the degree of problem. It's a question of judgment and I think it's very difficult to figure out how to assess the degree of a problem. For example, if I'm evaluating a new project and people quote projections of doing \$10 million in revenue next year, I either don't believe them or I cut the amount they quote in half. What if it turns out that they really only do a million? I might have thought I was being conservative by cutting the projection in half but I really should have cut it by 90 percent. Particularly at Greylock, we do our homework and we identify the problems, but it's most difficult to determine the degree of problems.

The Venture Capitalist's Role on the Board

The role that a venture capitalist plays in building a company is usually at the board of directors level. It's very important that venture capitalists have a great relationship with the CEO, other leaders of the company, and the other directors. There are very few situations where a venture capital firm can control the company. Usually, people want to put together a board of directors with a couple of venture capitalists and other industry leaders.

The board works principally with the CEO. Both sides have to be willing to listen to each other about changes since very few companies have an absolutely clear runway. You usually have to make a number of changes regarding product ideas or people or decisions about how to build the company. I would say that the role of the venture capitalist is to find a great CEO to support. Every CEO has strengths and weaknesses and a venture capitalist has to recognize what a CEO's weaknesses are and then try to fill in around them. For example, if a CEO is a great strategist then the venture capitalist needs to think through more operating details. On the other hand, if the CEO is totally focused on operating details then the venture capitalist needs to use the board meetings to push the CEO to think more strategically. I've been with companies where the CEO just wants to talk about strategy and I have to push to get a board meeting organized so that we can

address the nuts and bolts of operating details. When I've had other CEOs who just like to talk about operating details, I change the board meeting to focus more on strategy.

I often say to a CEO, "If a board member hasn't done anything in the course of two years to make you do something differently, then you ought to fire that board member, since that's a board member's role." I've seen many directors, who are often the CEOs of other companies, just sit in meetings as if they are watching a movie. They don't participate in really trying to help that CEO build the company. Directors tread a fine line since the CEO must run the company but the director needs to come up with ideas that the CEO will buy into. An example might be convincing a CEO to hire someone new. It might be that the CFO was fine for a start-up but when the company is about to go public a new CFO is needed. The board has to point out that the CFO isn't the right guy to take the company public and maybe suggest there could be some other role for the CFO to play. The director's challenge is to figure out how to convince the CEO to recruit a new CFO. That's how a board and a particular director can really make a big difference.

Changing someone in the company is often one of the toughest decisions a board will make. Part of why it's so difficult is that important decisions such as personnel changes require consensus. Another example of a tough change that requires consensus is a decision about when to sell a company. Let's say a director thinks a company should be sold because the market isn't big enough. Let's say the company has been growing 30 percent a year but it's starting to run out of market. One option would be to make the business part of another company where there is a larger sales force or a sales force that can sell into different areas. The board has to convince the CEO to do it. I've been fortunate that the CEOs I've worked with have agreed when I've suggested that it is time to sell. They may have been reluctant, but they have always come back to me later to say that they were incredibly thankful the company was sold.

One of the most difficult decisions, which comes up a lot in today's dot-com environment, is when to shut a company down. It's one thing to sell a company on a positive note or to sell a company that might be doing OK, since everyone's going to have a job in the end. It's another thing when you actually decide a company doesn't have a chance and no one wants to buy it so everyone's going to be out of a job. Part of what makes it so difficult is that we've all had experiences where a company is at death's door and suddenly turns around and becomes a big success. It's tough to judge whether or not to go back to the well once more and keep the company going. Deciding whether or not to keep a company afloat for the chance of a last-minute turnaround is one of the most difficult decisions venture capitalists have to make.

Near-Death Business Experiences

In terms of near-death business experiences, I've obviously had several over the years and I think there are lessons for both the venture capitalists and the entrepreneurs. I recall one example where we, the venture capitalists, continued too long with a business. Fortunately, we ended up getting our money back. Some years ago, we invested in a company called PetroData. There were two other investor groups and I think each of us had invested \$300,000, but the PCs basically wiped out the company's business. We tried

to redirect the business, and we went through three presidents, four rounds of financing, and even changed the name of the company. We worked on this company for nine years with monthly board meetings. In the end, we were able to sell the company and get our money back, but without a profit. It would have been better if we had taken a \$300,000 loss and sold the company in year three or four. It would have been better for us as venture capitalists and for the company, too. It was our pride that told us we would make this company successful one way or another. I think we continued the business for too long.

On the other hand, sticking with a business can pay off. I have a company in the health maintenance organization field. Three years ago, it was going through a very difficult time. In fact, another HMO company of mine, United Healthcare, also went through a period of incredible difficulty. United Healthcare almost went under but was saved by Warburg Pincus, which invested some money in the company. In the case of this company, which is still private, it lost \$7 or \$8 million about three years ago. Then last year the company made \$7 million; it will make \$16 million this year and is forecasted to make \$27 million next year. It's an example of a company that was in great difficulty but, because we all hung in there and provided additional financing and support, at least right now we're all very hopeful that the success will continue. That company has turned around and so has United Healthcare. Even when I talk about Stryker Corporation, with its \$12 billion of market value, there were times in the company's history when parts of the business had to make substantial layoffs. Overall, Stryker has had a continuous record of at least 20 percent earnings increases every year for twenty-seven years. To make that happen, however, there were times when they had to make substantial layoffs in parts of the business in order to reduce costs.

Reflections on Greylock's Success

Greylock has been very fortunate to have multiple families and, today, multiple institutions backing it. As a result, we're not dependent on any one source for money. Our backers have been so supportive that we have never had to spend time raising money. From time to time, other venture capital firms have to put substantial effort into raising money, but not us. We've been able to focus on finding and starting great companies and working with those companies.

There is also Greylock's multiple partnership construct, which I mentioned earlier. Another reason we've been so successful is longevity—no general partner has ever left Greylock. The venture capital process is very long. The exception occurs during brief times, such as during the dot-com years. Normally, however, the process of investing in an early-stage company, building it, and getting it big enough to take public takes seven or eight years. Also, learning how to be a venture capitalist takes a very long time. You have to learn, for example, how to find a company, how to negotiate the deal, how to act as a director, and how to recruit people. Then you learn all about going public or going through a merger. There are many aspects to being a successful venture capitalist. In addition, finding new projects tends to be more related to the individual than to the firm. A good venture capitalist needs to know people, so I think the fact that Greylock has had incredible longevity among its partners has been very important to our success.

Another reason for our success has been the range of ages among our employees. The founder of the firm, who is in his eighties, still comes to the office. Of the next two oldest guys, one is in his late sixties and the other is seventy. There are two of us in our late fifties and then we have several younger partners who are in their mid-forties. Some other people in the company are in their early thirties. We've been able to transition ownership and responsibilities in the partnership so that not everyone is the same age. I think that has been very important.

We've also been so successful at making high-quality investments because Greylock works as a team. We decide investments on a consensus basis. Our reputation also serves us well. We are known for never ever having to cut a corner. Our founder, Bill Elfers, took the approach of running a business with the highest ethical standards and I think people want to do business with us because of our reputation. I can recall times when we would be approached by a company that was competitive with one of our portfolio companies and it was a huge opportunity for us but we wouldn't invest in it. I think other firms may have made the competing investments. Not investing in competing projects has cost us a huge amount of money, but we've maintained the loyalty of our CEOs. I suspect that as a result of our CEOs' loyalty, we may have seen projects that other firms didn't. For example, when a CEO we've worked with is talking about his various venture firms, he might say, "Well, gee, Greylock didn't invest in the competing company," or "Greylock didn't sell their stock the day I went public. They continued to help me after I went public." It's those kinds of impressions, subtle things, that I think make a difference.

Finally, Greylock has been willing to invest in many different industries; we don't focus on just "technology" or just "optical switching." We've invested in a broad range of industries anywhere in the United States. Many firms will only invest in Silicon Valley or 128. We've been willing to invest from Boston to Miami and from Seattle to San Diego. I was a director of four companies in Wisconsin, for example. We will also invest at various stages of a company's development. We'll invest in start-ups, expansion, and technology buyouts. At various times, different parts of the economy are doing better than others and we've been willing to go where the opportunities are. When there are more opportunities in healthcare, we might be more active in healthcare. When there are fewer opportunities in that market, we are probably more active elsewhere. I would say that having a flexible approach to investing has been very important to our success.

How Venture Capital has Changed

I think that there are substantial differences in venture capital today versus thirty years ago. To my knowledge, I was the only person in the class of 1969, or in 1971 when I finished military service, to get a job in venture capital. Today there'll be a hundred students or more from Harvard alone who go into the industry. So the world has changed a lot in thirty years. In addition, the amount of money available for investing is very different. Back then, there were only a few firms in the business and we all worked together. We invested small amounts of money, literally a few million dollars a year in the early 1970s, versus \$100 billion today. The pace of change is also very different.

Thirty years ago, you couldn't really invest in information technology because IBM dominated the field, but IBM unbundled its software from its hardware and created enormous opportunities. Today, one can actually focus investments on technology because there are so many different aspects of technology. Changes in healthcare have also created enormous opportunities, including the whole biotech revolution. More recently, of course, the Internet has fundamentally changed so much of what we do.

In all, venture capital is very different today from what it was when I started thirty years ago. Today, venture capitalists have to, generally, focus on a company at a very early stage. In the 1970s, one could invest in a company that had been in business for three or four years and had some revenues and customers. Today, by and large, one has to back people with the idea before there are customers. The result is that there is much higher risk today since you can't talk about products and services with customers. In other words, the venture capitalist is guessing. Also, because of the amount of money around today, we're going to encounter a much higher casualty rate. There might be a hundred companies that have been funded and are competing in a space. Only two or three companies are going to make it, so the casualty rate for venture capitalists will be much higher than it was thirty years ago.

I would say that for the economy of the United States as a whole, it's fabulous that there's \$100 billion a year available to invest in companies, because new companies are really changing the way we do things. New businesses enable the United States to continue as the dominant economic power in the world. In fact, most of our small companies sell half of their products overseas. The surplus of capital is an incredible opportunity for the United States, but there will be a lot of hardship because there will be a high number of failures. It's just like what happened in the automotive industry: there were hundreds of automobile companies at the turn of the century but only three or four today. At the same time, the large amount of money is a real positive since one can start companies today that one couldn't dream of starting a few years ago. There is enough money that you can start companies when \$100 million is necessary.

For example, we've been a participant in a company called Storage Networks, where the company raised \$200 million privately in its first year of business and another \$200 million publicly in its second year. They have \$400 million to create a new utility where people can buy data storage like you buy electricity today. Building that company requires a huge front-end cost and the money is there for them.

Summary Reflections

To me, venture capital is all about building companies. There have been brief periods of time when people would start companies thinking they could bring them public and sell them immediately. We've seen people "flipping" companies in the last couple of years and also twenty and thirty years ago. There are times when the stock market is hot and we have lots of acquisitions and public offerings. Building long-term value, however, is really what venture capital is all about. Fundamentally, if you build companies, you're creating value.

I believe that today the venture capital firms are going back to their roots, focusing on building companies. I predict that the companies being funded now are going to be some of the most successful because the entrepreneurs who are leaving larger companies to start their own are really dedicated to building their ventures rather than making a quick buck. They really have an idea that they're committed to and they recognize that they are not going to be able to go public next year. They're interested in building long-term value. The venture capital firms have also re-oriented, recognizing that success won't happen overnight. VCs are doing a lot more homework, too. I think that in the dot-com market, there was a frenzy. There were success stories where entrepreneurs and VCs did very little homework, started something, and then sold it out. Today, all the venture capital firms are spending a lot more time doing their due diligence, negotiating the deals, and seeing what kind of values will work on a long-term basis.

Intellectually, venture capital is a fascinating business because you're always learning something new. No matter what your age or how long you've been at it, you learn something new every day. On the other hand, you don't control the companies you back. While a venture capitalist has to be someone who's interested in new ideas and a broad range of ideas, he can't be someone who has to control something.

Advice for Entrepreneurs

Today is an incredibly fortunate time for entrepreneurs seeking backing. Besides the \$100 billion dollars that's available for investing, entrepreneurs have lots of places to go for money. There are literally hundreds of venture firms they can talk to rather than the handful that existed thirty years ago.

My first bit of advice to an entrepreneur seeking financial backing is to pick an area where he or she has substantial experience. I often see people come in with a great idea but in an area that doesn't fall within their domain of expertise. Venture capitalists want someone who has spent a few years working. I know a young person who just graduated from college and wants to start a company. I said to him, "Look, why don't you work for a few years in the area where you want to start the company?" He doesn't want to listen. He wants to start the company. It may work out for him but I think that if you want to increase your odds of success, you should try to work in the area in which you want to start a company to develop some contacts and knowledge and see if your value proposition will really work. In addition, working will give you managerial experience in terms of putting people together and running departments and so on. So, first, pick an area where you have domain expertise.

Second, decide what your job will be in your future company and pick your role based on where you have expertise. I'm suggesting that the role an entrepreneur is going to play in the company should be consistent with his background. If an entrepreneur has always been a solo technology leader, he logically shouldn't say, "Well, I want to be the CEO of the company," since he's never had any broad managerial experience. He ought to say, "Well, my role ought to be to be the technology leader."

Third, try to talk to a number of leading venture capital firms and then listen to what they say. With all the money around today, if an entrepreneur talks to two or three leading firms and the firms are not interested, that should give the entrepreneur some pause. All the firms have a lot of money and they're looking for new ideas to back. If an entrepreneur can't get backing from top firms, he should consider that maybe his idea isn't as good as he thinks. Entrepreneurs sometimes make the mistake of going with an angel round of financing—receiving backing from their friends—after they're unable to achieve any backing or a substantial amount of backing from a leading venture capital firm. The mistake is apparent when the second round of financing comes around and the entrepreneur still may not be able to raise money.

Finally, while I encourage an entrepreneur to talk to several firms, I think he will find the most success if he's able to align himself with a leading venture firm. To me, starting a company is very much like launching the space shuttle at Cape Canaveral. You have to have everything just right because when you push the launch button, if you're missing something the ship won't go into orbit. Having all the right ingredients before you press the launch button is very important. By and large, working with an experienced venture capital group that has helped launch a number of start-ups should substantially increase the entrepreneur's likelihood of success. Then the entrepreneur should go talk to a few people in those firms, see if the people are interested, and then listen to their comments. Going back to the spaceship analogy, if you are on the launch pad and you press the button, you want to increase the likelihood of ending up in orbit, which is where we all want to be.

Defining Success

One more piece of advice for entrepreneurs; I think you can do well by doing good. I look back on a thirty-year career, having played a role in building a number of companies, particularly in the healthcare field, that do good things. It's very gratifying to be behind a new healthcare product that really does save lives or, in the case of an artificial knee or hip, makes people's lives much more comfortable. At the same time, creating that product creates thousands of jobs and large economic value. Even when I've been behind non-healthcare companies, it's satisfying to build a company and create jobs. Still, supporting healthcare companies has been particularly satisfying to me.