VALLEY BOY

The Education of Tom Perkins

Tom Perkins

GOTHAM
BOOKS

Chapter Six

A New Partnership, and a New Approach, Change the Venture Landscape

Late in the fall of 1972 two totally displaced Californians could be found wandering the Midwest trying to raise capital: Eugene Kleiner, urbane, Viennese-accented, and aristocratic looking, and Tom Perkins, tall, lean, and impatient. Things weren't going all that well. We were driving north from Milwaukee, where we had struck out, failing to raise a penny from a big insurance company there. We were now on our way to Stevens Point, where we would try again. I always drove on these journeys, because being a passenger with Gene was just too nerve-wracking for me; he tended to drift off the road while conversing. As we talked in our rented car, we reviewed our pitch and the events that had taken us into this Wisconsin wilderness.

University Labs had, for me, been about as complete a success as one could imagine. From the initial idea through the development, the financing, and the ultimate liquidity, all had gone as planned. Of course I had help from many others, but it had been my baby, so to speak, and I had, most importantly, played the role of venture capitalist from start to finish. So it seemed reasonable for me to plan a career to do it over and over again. I had in mind more of a hands-on approach than was the mode at the time.

In the early seventies there was venture capital to be found, but the numbers were small both in the dollars and in the number of people involved. The total pool of true venture capital at the time—that is, capital available to be invested in high-tech start-ups—has been estimated to have been much less than one hundred million

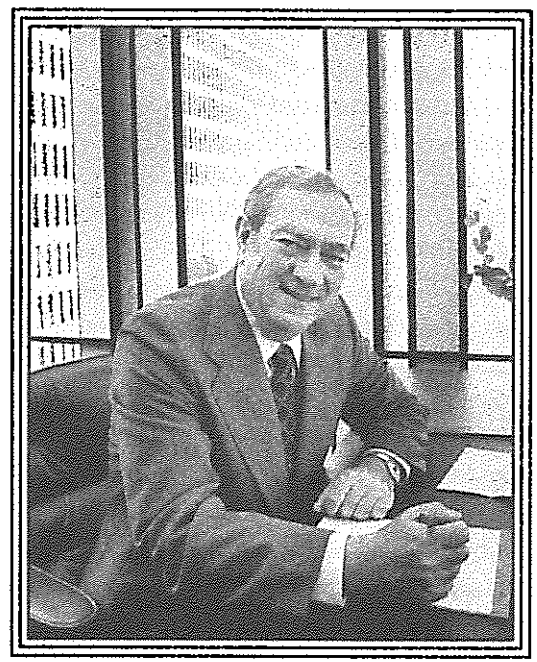
dollars throughout the United States, and all the practitioners could easily be assembled into one moderately sized room. The aforementioned Draper Gaither and Anderson group had dissolved, and General Doriot's American Research and Development wasn't doing much in start-ups, nor was it active on the West Coast. Instead, a handful of individuals with varying amounts of capital were placing bets. Two groups were most prominent: Sutter Hill, representing a Canadian corporation, and Davis and Rock, representing a number of limited partners. Additionally, John Bryan and Bill Edwards and Franklin "Pitch" Johnson were writing checks from their personal accounts. New York "old money" was also evident, principally the Rockefellers, the Whitneys, and the Bessemer group. But all these investors could more properly be called financiers than "operators" of the kind I had in mind. In my view, they spent most of their time in up-front analysis, rather than in after-the-fact management of the developing venture. To denigrate the approach, perhaps unfairly, it was more like a Las Vegas place-your-bets-and-take-your-chances experience than controlling the game itself, which is what I had in mind.

I thought that ventures could be managed like development projects within a corporation; the example of Packard and Hewlett, who were both marvelous entrepreneurs and superb managers, was at the forefront of my mind. In such projects, first the technical risk is reduced and then the other resources are added to build the business. The idea that the whole venture should be born complete, Venus-like, did not seem necessary, or even desirable, to me. But to become a player I needed more capital than I alone could provide. I knew Peter Crisp, a prominent figure in managing the Rockefeller family investments from the famous Room 5600, a whole floor in the Rockefeller Center in New York. Peter was impressed with my plans, and he "circled" one million dollars from the Rockefeller University's endowment (which he managed) for my fund, assuming that I could pull the remainder together. This was a good start, but I needed help for the bulk of the fund. I contacted an acquaintance and San Francisco investment banker, Sandy Robertson, to give me a boost. Sandy said that he had another friend, Eugene Kleiner, who

"is just like you and who is trying to do the same thing—you guys have to meet each other."

Gene admitted to me later that he was just as reluctant to meet me as I had been to meet him. Our breakfast at Ricky's Hyatt House on El Camino in Palo Alto was arranged simply as a courtesy to Sandy, and neither of us expected the meeting to last more than thirty minutes. In appearance and temperament we couldn't have been less similar. I have been characterized as being able to radiate tension by just walking into a room; this is among the kinder things said about my personality. Gene, on the other hand, was soothing and calm, portly but elegant in demeanor with a cultivated manner of speech. I often thought his would be the tone Sigmund Freud would have used with a patient on the couch.

He had a fascinating background. Born and raised in Vienna,



Eugene Kleiner circa 1974

he, his parents, and his sister had fled Hitler's occupation of Austria shortly before the outbreak of World War II. They all made it, but Gene, separated from the others, had to follow a long route through Portugal and South America, and it was nearly two years before the family was united safely again in Brooklyn, New York. Gene joined the U.S. Army and served with distinction, returning to attend Brooklyn Polytechnic on the GI Bill at the war's end. He found employment at Bell Telephone Laboratories (at that time the world's preeminent research organization), where he encountered William Shockley, co-inventor of the transistor. When Shockley Semiconductor was founded in Palo Alto, Gene joined the start-up, along with the other scientists and engineers who all became very famous when they left as a group to found the pioneering Fairchild Semiconductor Company. That was the organization from which, eventually, the entire Silicon Valley can be said to have evolved. While at Fairchild, Gene Kleiner ran every department at one time or another, save research. With all the instincts of an entrepreneur, he then founded Edex Corporation, a venture in the teaching machine business, which he sold to Raytheon for a profit in the millions. Along the way, he became one of the founding investors in Intel, and a limited partner of Davis and Rock.

After Gene and I shared backgrounds over breakfast, we discussed our ideas for venture capital. To our surprise, we discovered that we were thinking along identical lines. The breakfast carried on through lunch and then to meetings at our respective homes. At the end of two days we decided that we complemented each other and that we should team up. With Gene's assistance I wrote a prospectus for Kleiner & Perkins. In rereading it now, some three decades later, I am amazed at how clearly we foresaw our future and how closely we followed our formula. Our emphasis was on management of ventures, and we had a chapter called "Making It Happen," detailing the differences between our approach and our competitors'. Another innovation was our "Investor's Bill of Rights."

Both of us had participated in various partnerships in oil, real estate, and cattle breeding, and all with the same miserable results. The best example was a call I once received from the general partner of a feed lot tax shelter who said, "Tom, your cows died." Under our bill no profits, ever, could accrue to us, the general partners, until the investor's capital had been returned in full. Further, all profits would be returned to the investors as they were achieved and not be reinvested in new opportunities. Thus the partnership would automatically run out of cash and would have to be renewed with a new partnership if the business was to continue. In this way the investors could see an end, and not be locked in for the indefinite future, and good money would not be invested after bad. To emphasize that aspect, we put a specific limit (eight years) on the life of the pool, so that it had to be wound up.

Additionally, and this was both unique and very important, Gene and I were to be specifically proscribed from putting partnership money into anything in which we, personally, had an investment, or an inside track. This corrected the practice, which we thought unethical, of putting investors into stocks for dollars per share that had already been purchased for pennies per share by the managing partners (this abuse was not uncommon at the time). Beyond this, we would invest in the partnership as limited partners, thereby putting us on exactly the same basis as all the investors. We would not, thus, cherry-pick for ourselves among any of the prospective ventures. And finally, we would not invest in anything whatsoever that was within the remit of the partnership. In other words, we could not use the partnership as a sort of lighthouse to attract ventures that we then might take for ourselves. Probably today this all sounds obvious and routine, but at the time it was not, and I think it has been the enormous success of Kleiner & Perkins and the follow-on partnerships that forced these standards upon the whole current multibillion-dollar high-tech venture industry. But our model still is not universal. Today I stand in awe at the way the managing partners of some of the huge buyout funds reward themselves: fees for raising the fund, fees for managing the fund, fees for doing the deals within the fund, and profit participation from individual investments whether or not overall profits are achieved. In one of these giant funds *your* cows can still die.

As I had a million dollars circled from the Rockefellers, so Gene

had circled four times this amount from Henry Hillman, the Pittsburgh billionaire. Our first step, then, was to get our two "circlers" to agree on combining our two putative funds into a single larger one. We had decided to raise ten million dollars, and if the Rockefellers and Henry Hillman agreed to our plan, we would be halfway home. Peter Crisp agreed for the Rockefellers over the phone, but Henry wanted to meet me in person.

Henry is among the richest and, by careful design, least-known powerful individuals in America. He made his billions the traditional way: he inherited millions from his father (the last of the true breed of Pittsburgh "robber barons"—coal, canals, shipping, and smokestack industries) and then multiplied the fortune many, many times. I first met him in his Pittsburgh tower, the Grant Building, which he sold to the Japanese at the top of the market and then repurchased, years later, at the bottom. He took pride in the fact that the Hillman companies were invested in virtually everything in the U.S. industrial index—missing only high-tech venture industries. He owned, I recall, a large percentage of all the 747 jets in the world, leased to numerous airlines, and some of the largest real-estate investments in America. Tracts of downtown Boston belonged to Henry. But venture capital was a void in his portfolio. He loved technology, and he was fascinated when I showed him on my HP 35 pocket calculator how to calculate the compounding of capital at ten percent per annum. He had never seen Bill Hewlett's invention, but he certainly understood the potential of venture capital. He accepted our plan to combine forces, and he offered to provide fifty percent of the eventual total capital. I asked, "Why fifty percent, Henry?" His answer: "So that my phone calls will be returned."

With fifty percent of our potential fund in the bag, Gene and I were optimistic for the balance. With a hunting list provided by Sandy Robertson we started our fund-raising tour, and we started to strike out almost immediately. None of the contacts in Manhattan were impressed. The fact that we both had been managers of big operations, and that we both had been successful entrepreneurs, didn't impress; we weren't financiers, and that's what mattered to

them. Gene's friends, the cofounders of Intel, Bob Noyce and Gordon Moore, invested a couple hundred thousand dollars (after extracting a promise from us that we would hold our salaries to no more than fifty percent of their previous levels), but even these big names weren't big enough to pull in other investors. We gave our pitch to about a dozen prospects on the East Coast with no luck, until we tried again in the Midwest. The Anderson family of Rockford, Illinois, clients of Sandy, agreed to sign up for a modest amount. (The Andersons have been in all subsequent K & P and KPC & B partnerships, our longest-term limited partners. Their charitable donations from the proceeds from these partnerships are of significant importance in their community.) We had had no luck in Milwaukee, and now we were on our way to Stevens Point to visit Sentry Insurance.

We were well received at Sentry and were nearly startled when the chief financial officer said, "Okay, sign us up." They liked the idea of a couple of Valley "techies" visiting them in Stevens Point; it may have been a first. On the strength of their endorsement I asked our host if he would call his counterpart at another insurance company in the nearby town of Wausau. My dad had worked his whole career for Wausau Insurance (Employers Mutual Insurance of Wausau), and I had spent a few years in the town as a grade-school kid. That place has probably the coldest winters on the planet; I remember that our postman froze to death one morning while he paused to rest along his route. (That was, of course, long before Al Gore became alarmed about global warming.) So after only a couple of hours' notice, Gene and I essentially made an unannounced call on the company when we arrived in town. Their CFO was polite, and when I offered that I had grown up on Ruder Street (how I remembered that street name I'll never know), he beamed with pride that a local boy had actually returned; perhaps another first. Incredibly, we made that sale too! So in a brief Midwest swing, we had brought our fund up to over the seven million mark.

However, that was the last of the easy money. Trips to Los Angeles and repeat visits to New York yielded only modest additional

commitments. We were stuck at eight million total, and we realized that our goal of ten million was unobtainable, at least in a reasonable time frame. And we started to worry that some of our circled investors might slip away if we didn't close. That's when Gene said, "When the money is available—take it." I kidded him ever after that he had expostulated Kleiner's First Law; there were more to come. His most profound, I always thought, was "The more difficult the decision, the less it matters what you choose." Think about it.

So, short of our goal at the end of 1972, we drew down the eight million and established Kleiner & Perkins. It seems incredible to point out that this pool of capital, tiny by today's standards, was the largest fund in the entire world devoted to high-tech venture capital. The local comments were all negative, along the lines of: "It's too much. How can they possibly invest that much?" The great irony is that the locals were entirely correct!

We set up our office on Sand Hill Road in Menlo Park (now famous as the Wall Street of venture capital), and we hired two additional partners, both of whom had worked for me at HP: Jack Loustaunou, a financial guru, and a marketing whiz, Jimmy Treybig (who had been in charge of HP's computer peripherals). And then . . . nothing happened.

The telephone didn't ring, entrepreneurs didn't troop to our door, in spite of our efforts to promote ourselves. Gene and I spoke to every group a notch above the Boy Scouts that showed the slightest interest in hearing from us. We contacted numerous professors at the University of California and Stanford, and we wrote articles for the local papers. Still, no proposals flowed to our fund. We did begin to receive business plans through the mail, however, which we dutifully read—except those written in crayon (we knew that those were from inmates in mental institutions, and that the staff didn't trust the writers with anything sharper). I confess, right now, that K & P and KPC & B has never financed any plan that arrived through the mail. If the entrepreneur can't figure out some personal approach, it's just too hopeless to consider. But we read them anyway.

This was a tough time for Gene and me. We both had financial interests outside of the partnership—for Gene it was Intel, and for

me it was Spectra Physics, the firm that had acquired my laser company. I was on the Spectra board and I think I nearly drove Herb Dwight, the company CEO, nuts with my "help." There was one board meeting when he became so frustrated with my interference that he climbed up on the boardroom table and walked up and down on it as he argued against my criticisms. I have forgotten the specifics, but I'll never forget the demonstration—somehow we remained friends.

K & P needed ventures! When you have a fund, there is pressure to invest; it is embarrassing to report the lack of progress each quarter to the limited partners. We began to haunt our competitors. Thankfully, Bill Draper of Sutter Hill let us participate in one of their investments with Qume, a printer company. It proved to be a good investment, and one on which we made a respectable return. But three start-ups we did thereafter were embarrassing disasters. The first was a semiconductor start-up in which we investors saw our money drain away like water poured onto desert sands by the inexperienced management.

The second, Tread-Two, had a longer life, but it too failed. A young entrepreneur had the idea of resoling expensive tennis shoes with new bottoms. The venture began to succeed, and thousands of boxes of shoes arrived, each containing a ten-dollar bill to pay for the new sole—so the business was in effect self-financing. But when he decided to come out with his own brand of shoe he was up against Nike and Adidas, and the inventory requirements and advertising took an enormous infusion of cash that we couldn't raise. We wouldn't commit it ourselves, so it too failed.

The third sounds the most ridiculous, and it was the idea that Jimmy and I talked Gene into having K & P back. It was called Snow-Job—admittedly a most dubious name, but that's what it was really called. We met an inventor who had figured out how to convert a motorcycle into a snowmobile. It really worked. I had a ball with the prototype in the snow fields up in the foothills of the Sierras for a whole day. It was much faster and more maneuverable than a conventional snowmobile, and it could be converted from one to the other in a few minutes. We put the money in, but before we had

Hell's Angels and their biker girlfriends on their hogs tearing up the pristine fields of snow, the government, in response to one of the country's fuel crises, outlawed the sale of gasoline for sports vehicles. That ban was later lifted, but at the critical moment we couldn't get dealers to stock our Snow-Jobs, so that venture crashed too.

If K & P hadn't been on the threshold of becoming arguably the most successful investment vehicle in the history of man, I wouldn't admit to all this stupidity. But after these failures, Gene and I changed our strategy. We decided to create our own start-ups.

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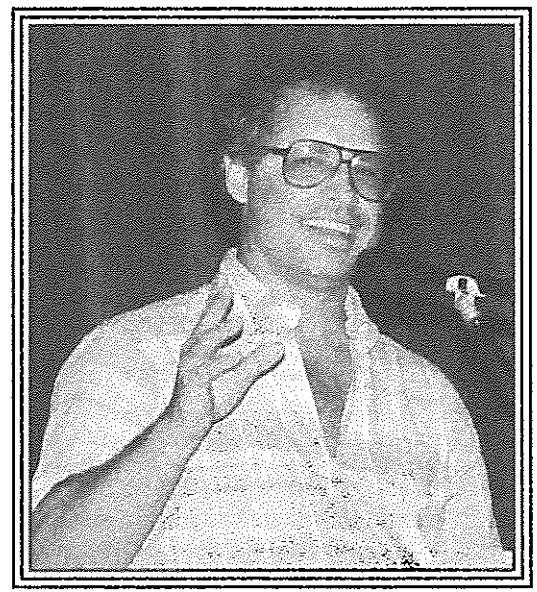
Jimmy Treybig played a huge role in the transformation of K & P. We hired him because of his general marketing skills and not specifically for his computer background, but his computer savvy was excellent. He had the germ of an idea that he and I began to kick around. The idea was to design a computer that could not fail, to be used in mission-critical applications, of which there are many throughout industry. Both HP and IBM offered such systems, but they were simply lash-ups of conventional computers. They were very expensive, slow, and not really fail-safe in the fullest sense. Jimmy thought that an entirely new approach might be possible, one in which multiple computers all worked together, with no redundancy. Instead they would self-check each other, so that if one failed the others would take over. Since, often, computers don't simply fail, but rather "go crazy" and try to erase data, or write infinite streams of ones or zeros, the sane computers in the system would vote, and isolate the "mad" processor from further participation. The idea was extremely ambitious technically; it had never been previously attempted. But Jimmy and I agreed that if it could be invented, a large market could be found.

Our afternoons became dominated by this idea. Jimmy and I made diagrams of how the logic might work, and we couldn't prove to ourselves that it couldn't be done, so we took the step of hiring consultants, true experts, to see if it could be done. Mike Green was a software expert from HP and Jim Katzman was his hardware counterpart. These guys, together with Bill Davidow, who had a PhD in computer science, started to work on the ideas Jimmy and I had sketched. The most difficult problem in clusters of interacting computers is that of "contention," that is, how to handle the problem of access when two processors request the communication circuits at precisely the same instant. This problem was solved, for the first time in computer systems, by our little group. But the real innovation was in the software operating system. I'll spare you the technicalities, save to say that it was packet-message-based, expandable to huge numbers of systems, and so hardware-independent that it survives to this day having been reimplemented through numerous generations of processor hardware. That system, which we called the "nonstop kernel," is one of the great breakthroughs in computer technology, and it led to a multibillion-dollar success.



Jimmy Treybig shortly after founding Tandem Computers

We decided, after much debate, to call the nascent venture Tandem Computers—my vote for Datadyne lost out. We had fun naming things; names of my choice that did prevail included my Lasertron and, later, Computed Sonography for the company Acuson. After we persuaded Gene of the virtue of our ideas it was time to proceed. There was never any doubt as to who would become the CEO: Jimmy was the only name on the list, and Jack, our financial guy, decided to become the CFO. I signed on as chairman, with the job of raising the money.

I showed our business plan, which I had mostly written myself, to all the local potential investors with no luck. A trip with Jimmy back east fared no better. But the more we struck out, the more convinced we became that we were on the right track. The investors' rejection was based solely on general worries over the companies in the field: IBM, DEC, and HP. They had little understanding of the technical breakthrough we had achieved and how difficult it would be for those competitors to duplicate our effort and circumvent our patents already in application. These were financiers, after all, who maybe were clever with money but who had no feeling for or confidence in technology, the kind of investors who relied upon hired experts to tell them what to think.

Gene and I decided to finance the whole company, staking a very significant portion of our fund on the idea. Probably it was a courageous decision, but at the time we thought it to be a sure bet. In fact, every time I have written a check, I have felt utterly confident of winning. Then when I lose, it somehow gets buried in a different part of my brain, and doesn't get in the way of the next check. Gene and I were both on the Tandem board, with me as chairman; it was similar to University Labs, except that I could work on Tandem full-time, when needed. At the last instant before closing the contract, "Pitch" Johnson, a prominent Palo Alto private player, invested a token amount from his own pocket. The money wasn't enough to make much difference, but his endorsement of the idea was gratifying, and his investment had the great advantage of involving his associate, Brook Byers, into our mix. Brook would, in due course, play a major role in our future.

Tandem Computers is well known in the Valley and today, after its acquisition (first by Compaq and then by HP through the Compaq acquisition) it continues to occupy the top of the pyramid of HP's computer offerings. Tandem dominates the market for large fault-tolerant applications, with eighty percent of the world's stock exchanges, most of the credit networks, automated gas pump credit card systems, and so forth. You most likely depend upon some Tandem system somewhere every day in your routine activities; when you use your credit card, make a long distance call, buy or sell a stock, and so on. I am not going to take you through the history of the company, however. Rather I will simply point out that it fully validated the K & P approach of hands-on management of ventures, which became our trademark. I, as chairman, participated in every major step in its history, even writing the prospectus for its initial public offering and guiding its road show. That IPO was a big success when it came out in 1977; it put K & P on the map—and it put me off investment bankers for the remainder of my business career.

The term *investment banker* is marvelously misleading. Even the greatest firms on Wall Street have little to do with investments, and even less to do with banking, in the marketing of an IPO. The term *fee-charging middlemen* is clearly less attractive, but it's much closer to an accurate description of their actual function. The Securities and Exchange Commission (SEC) requires a road show, staged by the bankers, for the client enterprise wishing to raise capital from the public. This is part of the due diligence necessary to disclose the risks of the offering to the investing public. The bankers use the tour to build a book of orders for the prospective issue, so that the offering is effectively sold, and frequently oversold by a factor of two or three, in advance. The syndicate of bankers typically dissolves immediately on the first trade and the bankers almost never have to actually purchase (underwrite) the issue, and thereby take any risk, whatsoever, in the transaction.

The cynicism of these investment professionals is profound—shocking, really. The Tandem IPO had two firms heading the syndication, a New York outfit and a San Francisco bunch. (Both firms are now, deservedly in my opinion, long defunct.) In the fall of 1977,

around Thanksgiving, I was at the biggest of the New York lunches for investors. Before I stood up to speak, the senior partner of the New York banking firm said to me, "Just look at them! They are all turkeys! Tom, you only need to stand up and say *gobble, gobble, gobble*!" At the San Francisco end, we discovered a rash of short sales, unusual for an IPO. Shorting is selling something you don't (yet) own. When you buy a stock, all you can lose is what you paid, assuming that it tanks and winds up with zero value. But when you sell what you don't own, by shorting, you have to cover eventually by buying the shares that you must deliver. There is a Wall Street limerick about this: "He who sells what isn't his'n, either delivers or goes to prison." If you bet wrong and the stock goes up and not down, you will have to pay more than what you received when you shorted—so there might be no limit to what you could lose. Shorting is dangerous and is rarely encountered in the clients of an investment banker managing or comanaging an IPO. I thought our banker should have discouraged the practice, as it can have a negative effect on the new company's stock price. Fortunately in Tandem's case, the shorters lost big-time as the price rose quickly in trading and the rise was then enchanced as the shorters scrambled to buy shares to cover their obligation to deliver.

Indeed, investors who bought shares on the IPO and held on eventually made twenty to one on their investment.

After decades of dealing with investment bankers, I find them to be exceptionally short-term-oriented; their focus is entirely on the transaction of that instant and their specific fee for that transaction. As my partner Frank Caufield says, "They have all the self-restraint of lobotomized sharks."

You may well ask: "If you are so disgusted with investment bankers why do you continue to deal with them?" You have a good question there. It's because they are the SEC-licensed gatekeepers to accessing the public market for capital; they are a necessary evil. Maybe, somehow, eventually through the Internet there will be a way around the bankers—powerful Google tried this in a hybrid IPO offering with both bankers and the Net; in my opinion with a very unfortunate result for the company because of, I think, the

behind-the-scenes machinations of the bankers. At the end of the world, after the sharks have long gone, the investment bankers will out-survive the cockroaches. There is only one major exception: Bill Hambrecht, a San Francisco investment banker of uncompromised lifelong virtue . . . but, alas, he is a hopeless liberal Democrat!

Gradually Sand Hill Road began to accumulate other venture capitalists. Stanford University was proving to be a magnet for entrepreneurs and Kleiner & Perkins was proving that serious money could be made in venture capital; our success did not go unheralded. But Gene and I were uncomfortable in their company. We didn't want them to see who we were taking to lunch; we didn't want to be considered part of the flock. Eagles don't flock, was our joke. We moved our office to a tower top in San Francisco's Embarcadero Center and were there from the mid-seventies to the mid-eighties. Eventually we had so many Valley employees that we relocated back to Menlo Park, where we remain headquartered today, with our San Francisco office only a satellite. In our first year in the city we undertook our next significant venture, and we were also nearly wiped out financially—I'll deal with that near-catastrophe first.

Perhaps taking Kleiner's First Law too literally, Gene and I drew down the investor's full eight million dollars at the outset, rather than calling it down over time as the need for more cash arose, which was the practice we instituted in all subsequent partnerships. So we had cash in millions earning only the very low rates available from government bonds. We wanted to take no risk with this capital base; our ventures provided ample risk for the invested capital once committed. However, we heard about a prominent arbitrageur who was achieving excellent returns on playing bond spreads in the public market. When done properly every spread is hedged, so that the only risk possible is the loss of interest on the specific contract. (If this isn't clear to you, don't worry. We didn't exactly understand it either.) We checked the man's references, and he was praised to the sky by his clients, so we committed one million dollars to his management. The initial results were most encouraging: a return in the vicinity of thirty percent per annum! Since these arbitrage contracts were complex, I asked Gerry Myers, the gal who replaced Jack as our

financial officer, to check them carefully, to be sure that for every short, or sell, there was a matching long, or buy, so that all the bets were hedged. The worst error would be to be "naked," or unhedged, and thus exposed to the unlimited risk (as explained in talking about the banker and the Tandem offering) of being on the wrong side of a short transaction. The contracts were complicated, typically requiring multiple transactions for a single hedge; very esoteric stuff. After some months, late one Friday afternoon, Gerry came into my office in tears. She said, "Tom, I just can't figure all this out. I can't make any of the recent stuff balance." I gathered the numerous trading slips and stuffed them into my briefcase, and I said in the most condescending way that I would do the balancing over the weekend and explain it all to her on Monday.

By Sunday night I was in a state of the purest panic! The contracts weren't even remotely hedged: our guru had put Gene and me into a naked, totally exposed short position of tens of millions of dollars! In trading these sorts of options it is possible to leverage one's capital hugely. It's an extreme case of trading on the margin. In our instance the arbitrageur had ignored his promise never to leave us uncovered and I found that we were vastly short. These kinds of transactions depend upon their profit by exploiting the tiniest of changes in interest rates between the two sides of a hedged spread. But with our being naked to the tune of countless millions (that we didn't have), a swing in interest rates could wipe us out—totally! Gene and I were personally at risk as the general partners; we could be destroyed in a few minutes in tomorrow's bond market. I called Gene at home and we agreed to meet our arbitrageur with our lawyer first thing in the morning.

Bruce Mann, our top-flight attorney, cautioned me to be silent as he explained the breach in procedure to the bond jockey in the latter's office. Maybe the guy was a crook, maybe he was a genius, but for sure as Bruce patiently explained, he was wrong. As our lawyer calmly developed his arguments on our behalf, I found myself trembling. I found that another person, actually a raging vicious beast, was inhabiting my body. Suddenly, I sprang up and nearly leapt across the table—later Gene told me that I was definitely frothing at the mouth—and I threatened the arbitrageur with horrible, terrible physical mayhem if he didn't immediately make full restitution! Bruce and Gene forcibly dragged me out of the place. They were still scolding me back in our offices when a messenger arrived with a check for the full amount. Apparently I had convinced the guy that I would, quite literally, kill him! We cashed the check. Nothing was lost. He went bust in a huge wipe-out some months later. And, to you Kleiner & Perkins partners of that period who are reading this for the first time, I apologize—it has taken me over thirty years to confess to this episode.

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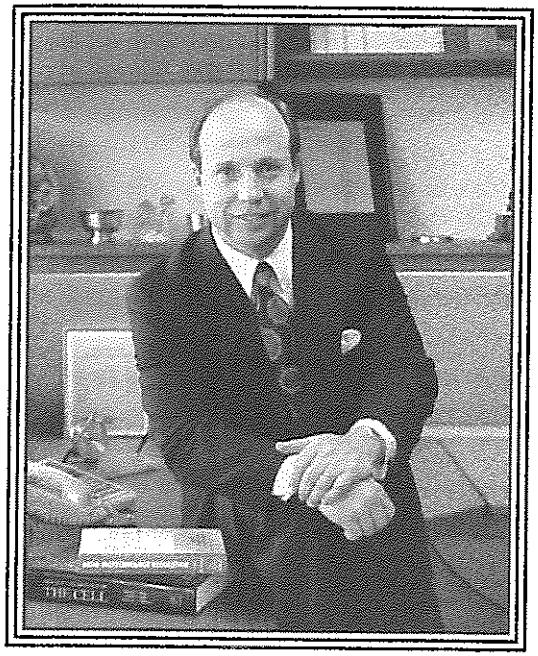
To replace Jimmy Treybig, in 1975 we hired Bob Swanson, a fledgling venture capitalist working in San Francisco for Citicorp Ventures. He was, coincidentally, the roommate of Brook Byers, whom we were getting to know through his involvement with Tandem. Bob enabled us to use the Tandem formula again, of spinning out a venture directly from the partnership. In Bob's case the venture was Genentech, one of the most successful companies ever created, and by any measure the highlight of my venture career.

Gene and Bob were both on the board of the early failed semiconductor company, and Gene believed that you could get a better handle on an investor's character in adversity than when things were going well. He thought that Bob's tenacity would be an asset, and when Bob became restless at Citicorp we offered him a partner's role with K & P. He was from MIT with a degree in organic chemistry and a master's from the Sloan School in business, both of which he obtained in just four years—smart guy! We had made an investment in a start-up in Berkeley named Cetus, founded by two medical doctors, Drs. Ronald Cape and Peter Farley. Their plan was to develop a new generation of instruments for use in biological laboratories. Labs hadn't changed much since the days of Louis Pasteur, and we thought that cell counters, and the automation of such other routine measurements, might be promising. However, in our opinion they were very slow in getting off the mark. It has often been said



Bob Swanson shortly after founding Genentech

that a sense of urgency is the key ingredient required for a successful entrepreneur, and we were worried that Cetus didn't have enough of that ingredient. So we put Bob on the case as the partner in charge of the investment.

Bob would never be accused of lacking a sense of urgency. He spent much time at Cetus trying to spur the company into something that could lead to success. He became fascinated by biotech, at that time not highly developed beyond the era of antibiotics. With the hope of inspiring the two founding entrepreneurs, Bob arranged a brainstorming lunch with them and Professor Donald Glaser (winner of the Nobel Prize in physics in 1960), who was actually a minor founding shareholder in the company, and who was well under way

in his second career in biophysics at Cal. Bob invited me to come along.

Glaser was amazing—a veritable fountain of ideas—none of which seemed to make much impression upon the two founders. During the discussion, the professor mentioned the pioneering work being done at the University of California Medical School by Herb Boyer, and that at Stanford being done by Stan Cohen, in the area of cutting and splicing strands of DNA (now commonly called gene splicing). Almost in passing, he said that it might be possible to use this new technology to create useful artificial genes (this is now commonly called recombinant genetic engineering). The idea, frankly, went over my head, and apparently it meant nothing to the Cetus founders either. But Bob caught its importance immediately, and he spent the next several weeks reading up on the technology and simultaneously urging Drs. Cape and Farley to take the possibility seriously. I caught some of his enthusiasm, and I called the two doctors, offering to loan Bob full-time to the company to help them, maybe, develop a potential business in the new science. They weren't interested. I'll not dwell further on Cetus, or my opinion of the company, except to say that after many years Cetus fell upon the technique of polymerase chain reaction (PCR) that won a Nobel Prize for their chemist, Kary Mullis, and led to their acquisition in 1991 by Chiron Corp. Eventually every pig finds its truffle.

Meanwhile, Bob had caught on fire. He had become fascinated with the idea of creating genes and developing whole new products from the technology. Imagine, he would say: we might be able to mass-produce anything, anything, that has DNA and that exists in nature—after we have done that we can move on to producing anything that doesn't exist in nature but that should exist! This could change the world! In medicine it could make antibiotics look like a small step! We could make rubber! We could make silk! It's the most important thing in our lifetime!

He pestered Professor Boyer on the phone, trying to get a meeting. Finally Herb agreed to five minutes on a late Friday afternoon. That meeting was possibly one of the most significant meetings of

minds since that between Bill Hewlett and David Packard. Since we are still probably on the ground floor of what Genentech created, maybe it was even more important.

The five minutes lasted many hours, and spilled from Herb's lab into a nearby bar where a number of beers were consumed. Herb was not against the possibility of using the DNA cutting and splicing technology for commercial purposes; he just thought it too early. He and Professor Cohen held the basic patents (assigned to their respective universities and called the "restriction enzyme patents"). Boyer simply believed that the technology was too primitive to be commercialized. He thought perhaps another ten years of basic work at the university level would be required. Bob, however, kept repeating the questions: "Why will it take so long? What if you could bypass the whole cycle of writing proposals for government grants? What if you had all the money you needed up front? Would it then really take so long?" The more Bob pressed, the more Herb began to rethink. Maybe it really could be done faster. Over the weekend they continued to explore the idea of establishing a business right away. Within a week or so, Bob had drawn up a business plan that he put upon my desk, enthusiastically expounding on the idea and on why I should back the venture.

Twice before I had mastered new technologies, in lasers and in computers, so the technical aspect didn't daunt me too much. I figured that I could learn it. But it was immediately clear that this idea was verging upon pure research. Venture capitalists shouldn't *knowingly* fund pure research, everyone knew that; that's a ticket for losing millions—in pure research, by definition, there may be no payback—if the payback were guaranteed it wouldn't be research. And Bob was proposing, literally, to create a new form of life. In other words the idea was to assemble a desired gene, and somehow trick a bacterial cell into hosting it. This microbial Frankenstein would then have synthetic DNA possibly enabling it to produce a new substance entirely alien and unnecessary to its normal existence. Forgetting Darwin, would *God* permit us to create such a strange and unnatural new form of life?

Further, the plan called for an investment of nearly two million

dollars. Space would be acquired, equipment purchased, scientists hired, and after all that, the experiment attempted—what if it didn't work? I didn't reject the idea out of hand. Instead, I asked to meet Dr. Boyer to hear his ideas directly. Bob quickly arranged the meeting, and for the first time Herb came up to our penthouse office in the Embarcadero Center to meet me. He was obviously brilliant. (What surprised me most, though, was his charm. That encounter was the beginning of a friendship continuing to this day.) Rather than get into an explanation of the scientific details, which I knew would quickly be over my head, all my questions were oriented along the lines of, what (specific) equipment will you need? How long will it take to the first step? How will you test to see if you have the expected results, and (again) what equipment will be required for the tests? Herb had all the answers. He had thought through each step in detail and could identify all the critical checkpoints. While he couldn't guarantee the result of the experiment, he clearly knew how to undertake the experiment in a very specific way. I was impressed.

The next morning I sat down with Bob for the most serious discussion of his career. I pointed out that even if K & P put up half the money I didn't think I would be able to find other risk investors—the project was just too far into pure research—and even if we could find the full amount of venture capital, the risk would be so high that the investors would own virtually all of the company. Bob and Herb's share would be nominal. I agreed, totally, that the potential payout could be enormous. I didn't need market research to persuade me that true human insulin, for example, would make obsolete the expensive-to-extract and allergenic pig and cow insulin then in use. There are millions of diabetics around the world; decades ago the discovery that porcine and bovine insulin could work in humans was a breakthrough, but the side effects from long-term use of this nonhuman substance frequently lead to severe complications (including death). True human insulin, really truly identical human insulin made abundantly, even if by a nonhuman cellular host, would be an astonishingly valuable thing. The list of potential products would range far beyond pharmaceuticals, as well, into the

worlds of agriculture and industry: plants that would be naturally pest resistant and growth hormone for cows to multiply milk production are just examples from the tip of the potential iceberg.

I reviewed with Bob my experience with University Laboratories, how I had stretched a tiny amount of cash into a successful venture by subcontracting the work, so to speak. I asked him to think about how the experiment maybe could be split among existing laboratories. Once it succeeded, we could pour in the money. That way Bob and Herb would wind up owning far more of the company than if we tried the all-cash-up-front approach, because all the follow-on financing would be done at much higher (and thus less dilutive) prices. Bob disappeared for a couple of days after this meeting—I think he contacted some other potential investors and got turned down flat—and, for sure, he and Herb rethought the plan along the new lines that I was suggesting.

Bob came back with a radically different approach. He proposed to subcontract part of the experiment to the City of Hope Medical Research Foundation in Duarte, in Southern California, which was one of the two groups in the United States with the technology to build synthetic genes via organic chemistry (the other group was at MIT). The other half, the splicing of the created gene into a bacterial plasmid, would be done through a contract with Herb's lab at the UC Medical School in San Francisco. Further, to reduce costs, only a very short gene, that for the human hormone somatostatin, would be attempted. The experiment would be a proof of principle, to see if God would go along with our manipulations to create Frankenstein-like bacteria. If the experiment worked, we would shoot for the much longer gene for human insulin. I agreed with this approach, which reminded me of that taken for University Laboratories. And I agreed immediately to invest one hundred thousand dollars to get started.

Genentech was thus incorporated. It consisted in the beginning of only Bob, in his office, and his checkbook. He and I committed ourselves full-time to negotiating the research contracts with the two institutions and obtaining licenses to use the basic patents held by Cal and Stanford.

We visited the researchers in Duarte, and coordinated with them the steps needed, laboriously, to build the gene amino acid by amino acid using pure organic chemical techniques; the tricks to extract genes from nature lay far in the future. After some months the gene was ready, and it was transferred to Herb's lab at UC for implantation into a willing bacterial host. (I exaggerate. The bacteria may not have been at all happy, but a consent form was not required.) In due course Herb had a bacterial broth continuously producing somatostatin. This was a breakthrough in research of the very highest magnitude, albeit one with no immediate commercial importance. Bob and I agreed to underwrite the development for the gene for human insulin, and we pursued the same approach. In due course, Herb produced that hormone as well.

Now we were ready to tell the world! The announcement of the synthetic production of true human insulin by the hitherto-unknown science of genetic engineering was a headline-grabbing event of immense importance. Genentech had filed for fundamental patents in all directions, and Bob, Herb, and I, who constituted the entire board of directors, were sitting atop a venture that would rocket into history as, in percentage return, the most successful venture capital investment of all time. For an investment of only two hundred and fifty thousand dollars, K & P owned a third of the company—Bob and Herb owned the rest.

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During this period in the life of K & P I was spending between one and two days per week on Tandem and Genentech. I was chairman of both companies, and it was my specific responsibility to see that neither ran out of money. This wasn't much effort for Tandem, which had good profits and a strong cash flow, but it was a continuing challenge for Genentech. During the fifteen years or so that I was responsible for Genentech, I raised around three billion dollars for the company. The first of the big financing steps was the public issue. The board was divided on the decision. I was strongly in favor; Bob was strongly against, knowing full well how much extra work it

would require, Herb was the swing vote, but he ducked the decision by telling us both, "I will vote with the majority of my friends." In other words, work it out between yourselves, guys. The decision simmered for some days, but when I suggested to Bob that Cetus might be the first biotech company to go public if it wasn't us, he quickly came around to my viewpoint. Bill Hambrecht handled the offering. The issue was hugely oversubscribed, and the price shot from the low teens to nearly ninety dollars per share in the first hour of trading, which created more headlines for the company. If you bought shares at the offering price, held them, and reinvested as necessary, adjusting for all the splits, one dollar of the IPO would today be worth around three hundred and fifty in your pocket.

Keeping Genentech in cash took some financial inventions. Long before Enron's Lay, Skilling, and Fastow thought of off-balance sheet partnerships to convert losses into profits, Fred Middleton, the CFO, and I invented the idea, and we used it to finance Food and Drug Administration clinical trials. The difference was that we licensed these partnerships with the SEC, and they were fully approved; also, they proved to be lucrative for the investors. Further we invented cheap Junior Common Stock to use for options for our rapidly expanding employee base. Again the idea was fully SEC approved. However, over time both these ideas were so abused by competitors that the SEC shut them down, "grandfathering" those plans of Genentech's until their programmed expatriation dates. I was busy on the financial side, building the board by bringing my mentor Dave Packard on, for example. Dave was a marvelous director, who took a great interest in the company. As his hearing deteriorated with advancing age, he would mount the microphone of his hearing aid on a short stick he carried around with him, and thrust it in the face of whomever was speaking—he never missed a thing. The story around HP was that when asked: "Dave, have you learned a lot about DNA at Genentech?" he answered: "I haven't learned a damn thing about DNA, but I've sure learned a lot about financing."

Bob created an internal culture of profound significance. He was able to recruit many of the world's outstanding scientists from

academia by giving them full rights to publish, provided only that they had first disclosed their discoveries to the patent department, and he developed a research department second to none. The academic papers published by Genentech today rival in number and quality those of the two most respected universities, Harvard and MIT.

By the late seventies, it was clear that thanks primarily to Tandem and Genentech, Kleiner & Perkins was the front-running venture partnership in America. It was time to bring aboard more partners and to restructure the fund accordingly. But those doubters at the beginning who said that we would never be able to invest eight million dollars were right. When we decided to put our new fund together, we still had about four million in cash, which, as promised in our Bill of Rights, we returned to our (very happy) limited partners.