My HP Journey to Agilent Technologies

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EARLY YEARS

I was born in New York City on the Upper East Side of Manhattan, an area that's now called Harlem. My father was a civil engineer and my mother was a home economics major. They met at Drexel University and both worked before getting married in 1939. My mother was a teacher in the Poconos in Pennsylvania and my father worked in New York City on the Long Island Parkway. They lived in Jackson Heights on Long Island after they married and that's where they lived when I was born.

My dad's company was involved in the Manhattan Project during the war and we moved to Oak Ridge Tennessee for a few years shortly after I was born. My dad wasn't involved in the nuclear side but was involved in the construction of the buildings on the site. Interestingly enough, my mom never knew why my dad moved the family to Oak Ridge until after the war.

After Oak Ridge we moved back to New Jersey, first to Saddle Brook and later to Ridgewood. I attended kindergarten and elementary school there while my dad commuted every day to his office in New York City. I was an only child but have fond memories of playing baseball and biking in the neighborhood with lots of friends.

I had a wonderful childhood. We traveled around the East Coast and visited relatives in Southern New Jersey and Pennsylvania. My dad being an engineer was great because whenever we'd go on trips, we'd have to stop and see how every bridge and dam was built. This started me on a path of science and engineering at a very early age. I liked understanding how things worked and that curiosity continued with me throughout my career.

Then in 1955 when I was 12, my dad announced that we were moving to California. He had taken a job with a friend he had worked with in New York who was starting a company in Pleasanton, California to build nuclear power plants. I remember my mom and I being very upset with this as it meant leaving all of our friends and relatives on the East Coast behind. The company he joined didn't last more than a couple years but fortunately General Electric had their nuclear power division in San Jose so my dad ended up there and was project manager for a number of the new power plants they were building in Europe and around the world at the time.

When I first came to California I was in seventh grade and hadn't really found my way yet in school. I wasn't a big fan of school when I was back East and would much rather be out on the ball diamond playing baseball or shooting baskets or doing something like that. So, my life at this point was all about sports. It was only later on that I began to understand the importance of studying. It was actually a seventh-grade teacher that took me aside one day and told me how he was disappointed in me and that he knows I can do better. He encouraged me to work harder and take my studies more seriously. My parents also made it clear that they had higher expectations for me as well so I got the message and from eighth grade on I was a pretty good student.

I went to 7th and 8th grade in North Hillsborough and then went to Burlingame High School. I was very fortunate that I was able to take a lot of math and science classes there. I was also able to get some valuable leadership experiences. Some friends talked me into running for class president my sophomore year. I remember giving a speech and was shocked that I won. I enjoyed working with other kids on the

student council and working with the administration. I was then junior class president and student body president my senior year so I had a lot of great leadership experiences in high school.

I also had a lot of leadership experiences in scouting. I started in Scouts on the East Coast and continued it in California. I became and Eagle Scout and also a Silver Explorer. One of my first leadership experiences was when I worked at a scout camp one summer and had to lead a bunch of young kids on hikes. I was probably 14 or so and had to take groups of young kids into the woods or to the beach and back. I remember enjoying the responsibility. I enjoyed getting the group working together as a team and accomplishing our goal of completing the hike. I think a lot of these leadership experiences when I was young helped pave the way for me later in life. I give a lot of credit to my parents for letting me do all that stuff and to all of my mentors in Burlingame High School and Scouting.

After graduating from Burlingame High, I went to Stanford. My advisor in high school told me not to bother applying to Stanford because I actually had one B in high school. I decided to try anyway and fortunately I got in. I looked at Berkeley and a number of other great schools and felt fortunate to get into Stanford.

At this point I was pretty sure I wanted to be an engineer but I wasn't sure what kind of an engineer I wanted to be. I started off in mechanical engineering and then, after a couple quarters, I changed to aeronautical engineering. Then, at the end of my freshman year, I changed to electrical engineering.

One of the things I learned to appreciate about Stanford is that you were required to take a number of courses in different fields. So, in the last quarter of my freshman year I was taking an introductory course in electronics. I had a great teacher, a professor named Jim Gibbons, who ultimately became the Dean of Engineering and later my advisor in my graduate year. Jim walked into class one day with a box of vacuum tubes and said, "See this? This is the way electronics used to work. See this? (he showed a transistor). We're not going to talk about that anymore (the vacuum tubes). We're only going to talk about this (the transistor)". So, I got really fired up about semiconductors and learning about electronics and switched my major by the end of my freshman year to Electrical Engineering.

I continued on with electrical engineering while I was at Stanford. I found I had to study hard but I also learned a lot from other students. There were so many interesting people at Stanford and I used to enjoy the time we'd have together talking and trying to solve the world's problems. I tell people that half of what I learned in college was from other students. It was such a wonderful experience but I didn't do anything leadership-wise. I really didn't do much of anything other than study and a little bit of intramural sports. Often my friends would go out on Saturdays or go to a football game but I had a lab to go to or a problem set that I needed to do. Fortunately, I was able to get together with other engineers and work together.

Over time I learned to appreciate Stanford's approach to teaching engineering. The tests were rarely similar to the problems we studied in class. We had to learn to apply what we knew to entirely new problems. Also, a lot of schools teach students how to design amplifiers, etc. by showing them specific designs that would work. Stanford didn't do that. They taught you to step back and understand what problem you're trying to solve and think about a number of different ways you can solve it. This was great since the technology was changing so fast that we needed to be prepared for a different solution than what was in the textbook a few years back. I really appreciate how Stanford prepared me for the fast pace of change in technology that I've experienced since I graduated.

I graduated with a bachelor's degree in electrical engineering in 1965 but I decided that I didn't feel ready to go into the real world yet and get a job. There were a lot of people in the engineering program who grew up building radios and playing with electronics and I wasn't one of those people. Therefore, I decided to stay on an extra year and get a master's degree. I don't remember applying but I was able to do that and Jim Gibbon's became my advisor. I did some research but mostly took additional classes. I finished in the fall quarter of 1966 but didn't officially get my degree until June '67.

EARLY YEARS AT HP

I finished my master's degree right at the height of the Vietnam War. That was during the time of the lottery system and being from San Mateo County I knew my lottery number was 12. I wasn't excited about signing up so I decided to try to get a job and see what happened. I interviewed at Motorola in Chicago, Bell Labs in New Jersey and TI in Dallas but everywhere I went the weather was terrible. I actually hadn't interviewed with HP on campus since I had decided I'd like to try living somewhere else. After visiting these other places, however, I decided that I really would like to stay in California.

I called a friend of mine who graduated the year before me and asked where it was that he worked. He said Hewlett Packard and he told me that the company was great and he really liked it there. I asked if he could get me an interview and he did. The interview process back then was very intense. I met with 6-7 people during the day and one of the interviewers gave me a technical exam. The person who gave me the technical interview had a stack of papers on his desk that seemed like it was about an inch high. I remember the first question was pretty easy and the second one was a little harder. The third one was getting harder but I still had the rest of the stack to go. I remember some really hard questions but I must have done OK since I ended up getting an offer to join the company.

I was originally supposed to start as soon as I graduated in December of '66 but I decided I wanted to do a little skiing in the break before I started and told the company I'd start in April '67. Literally the day after I took my last final, the draft board called and said "what are you doing now?" I told them I'm starting to work at Hewlett Packard and hung up and called HP to see if I could start the following week. I ended up starting in December of 1966 when HP had about $200M in revenue and around 4-5 thousand employees.

One person who interviewed me was John Minck who was the Marketing Manager of the Microwave Division at the time. I told him that I liked working with people and he asked me to consider a job in marketing after a couple years in the lab. I said OK and ended getting a joint offer from R&D and marketing with the understanding that I'd spend a couple years in the lab and then potentially move to marketing.

I started in R&D in the Microwave Division and my first assignment was to be part of a design team to design a solid-state version of one of HP's older vacuum tube signal generators. The project was an earlier version of what would eventually be called the 8640 signal generator, although the version I worked on was later canceled and started over. It used a series of oscillators that covered the range from 1Mz to 1Gz. I was working on one of the lower range oscillators and also the audio part of the product. I later worked on an RF sweep oscillator and also a network analyzer product. One of my projects was to ruggedize one of our products to meet the tougher environmental specifications required for military applications. It turns out that this project helped me get a deferral from being drafted. Someone from HR wrote a letter to my draft board suggesting that the US might lose the Vietnam War if I didn't continue on this project.

My plan was to spend 2-3 years in the lab and then consider a move to marketing. I soon realized that I didn't want to spend my whole career on a workbench and started looking forward to a move to marketing. However, every time I told my lab manager that I was ready to move, he said "no", I need you on this project. So, I ended up spending 3-4 years in the lab but in hindsight I'm glad that I did. I learned a lot about the design process and it deepened my understanding of the technology and where it was headed. When I later took on more management responsibilities, I always felt comfortable interacting with engineers on technology and being involved in strategic product decisions. I felt like the time I spent in the lab was a great help to me later in my career.

During the time I was in the lab, engineers were encouraged to work on their own projects after hours. I was single then and had time to take on a project so several of us decided that we would build the "world's best' stereo receiver. This was different from Barney Oliver's amplifier but the two could work together. I worked on the power amplifier and others worked on the rest of the electronics. We also had a mechanical and industrial engineer designing the packaging and human interface. The project was a big success but we probably built the world's most expensive stereo receiver.

One day, the lab manager, Paul Ely, came to my desk and asked if I'd fix Bill Hewlett's stereo. Of course, I said yes and shortly after, Bill Hewlett shows up at my desk with a KLH Compact Stereo System. The next thing I knew Paul and John Young, the Division Manager, were also at my desk watching me take the system apart and start trying to find the problem. Around 11am Bill Hewlett got called away and said he'd come back around 2pm to pick up the system. Needless to say, I was sweating bullets over lunch and finally found the problem. Around 2pm Bill shows up at my desk, along with Paul and John. I was tuning the filters on the system but Bill asked if he could do it so he could adjust it for some hearing issues he had. I finished buttoning up the system and then he asked me about my background, what I was working on and how I liked HP. I remember thinking he could obviously afford to have his system repaired somewhere else but he saw this as an opportunity to meet with one of his young engineers. He impressed me as being very down to earth and genuinely interested in me as a person. This early positive interaction with someone in his position stuck with me throughout my career.

I had a similar interaction with Dave Packard at a New Engineers Dinner shortly after I joined the company. Everyone was enjoying the cocktail hour until I realized that people were mostly seated and the only two seats left were next to Dave and Lucile. Jimi, my girlfriend and now my wife, sat next to Lucile and I sat next to Dave. Afterwards we both commented on how nice and down to earth they were. We saw no egos and they seemed genuinely interested to learn about us rather than talk about them. This interaction also made an impression on me. I truly felt like an equal and valued employee in the firm.

After spending 3-4 years in R&D I finally had an opportunity to move to marketing. Doug Chance was the Marketing Manager of the Microwave Division at the time and he convinced me that there was a role for someone with my R&D background in marketing to work with the lab to help define the future products we should be developing and to develop the marketing plans for those products.

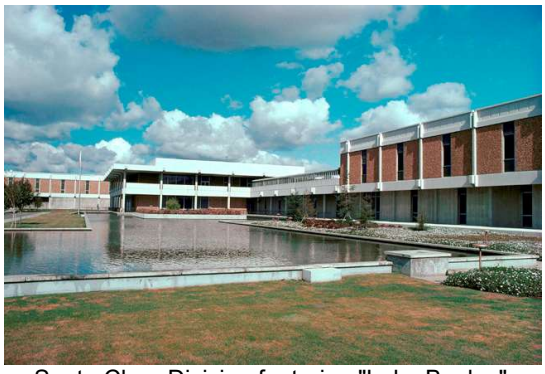
After spending a couple months in marketing, Doug suggested that I needed to learn more about customers since I was coming at marketing with too much of a product point of view. He sent me out into the sales organization to call on customers and be a sales support person in the field sales organization. I was asked to go to the Los Angeles sales office and I'll never forget the very first question I got from a customer. He was designing a microwave oven and wanted to know how to measure the SWR of a turkey, roast beef and pork chop in a microwave oven so he could understand the differences.

That experience helped me realize that customers were more concerned with the application of our products than the products themselves so I became much more customer centric in my approach. I began to think more about customer problems and what customers might be looking for from our products. That was a great experience.


I was on the team doing site selection for the new Santa Rosa Division, which occupied a beautiful hilltop location in the Fountaingrove area.

In the early days, Dave and Bill had this idea that when divisions got to a certain size, generally around $100M, they ought to consider splitting with each part going off and trying to get back to $100M. This viral growth model worked well in the instrument business for a number of years. In the early 70's the Microwave Division had grown to over $100M so it was decided to split the division and take some of the product lines to another site. My wife and I were asked to visit and evaluate different sites and help make the final recommendation for the new site. We went to Albuquerque, Medford and Santa Rosa. We were asked to do this partly because they wanted the perspective of a young engineer but also because my wife was a teacher. Different people on the committee looked at different aspects of the communities we visited. Our job was to evaluate the education system and talk to some people in the education area in the community. There were 10-12 of us involved in this process and we all picked Santa Rosa as the site we felt made the most sense for a new division. It was only a couple hour drive from Palo Alto, had access to a major airport (SFO) and was also close to all the top universities in the Bay Area. It also looked like a great place to raise a family and recruit new engineers.

The initial products that moved to Santa Rosa were spectrum analyzers and network analyzers along with a high frequency gallium arsenide and thin film manufacturing facility. It turns out that my background in the lab and marketing was mostly on the signal generator side of the Microwave Division so at the last minute I was asked to stay behind in the new Stanford Park Division in Palo Alto since I was one of the few people that knew anything about the product lines that were staying there.


Santa Clara Division featuring "Lake Bagley"

I was initially a Product Manager for one of the product lines in marketing and then became the Product Marketing Manager for all the different product lines in the division. Al Steiner was the Marketing Manager. I did that for a couple years and then went to the Santa Clara Division as the Marketing Manager. John Blokker was the overall division General Manager but he divided the division into two parts since the division was so large and had so many product lines. Jack Lieberman was the General Manager for the part I was involved with which included frequency counters, logic analyzers and atomic clocks. There was also a separate part of the Santa Clara Division that was responsible for the Fourier analyzer and laser interferometer product lines but I wasn't involved with them directly. Santa Clara had so many different product lines that we used to call it the "Science Fair" Division.

One of the interesting projects in the division was a Loran C navigational product used in private and commercial shipping applications. There was also a project in HP Labs using a new technology, called GPS, for navigation applications as well. I was asked to recommend how we should sell these products since the customers were clearly different than the rest of our instrument product lines. I remember going up to Seattle to meet the head of the Alaskan fishing fleet and asking for his recommendations. The first question this person asked was how fast could we get them up and running again if one of our receivers failed out at sea in the middle of the fishing season. After talking to this person for a while it became clear that we would have to do things very differently for this business and we weren't even sure how big the business might be. We looked at cancelling the project but ended up letting the project lead on the project, Charlie Trimble, spin it out and start a new company which became Trimble Navigation. In hindsight, this was probably the best outcome for everyone involved.

SPOKANE DIVISION

In 1980 the Stanford Park Division was 8 or 9 years old (after the Santa Rosa split) and had grown to almost $100M. The decision was made to split the division again and move the RF part of the signal generator product line to a new site in Spokane, Washington. I was the Marketing Manager in the Santa Clara Division at the time and wasn't involved in the decision to split the division or the selection of the site in Spokane. However, I was asked to be the General Manager of the Division and move my family to Spokane.

It was a tough decision however as we had just had our third child and the other two were 5 and 8. I committed to my wife that I would move back in a few years if it didn't work out but fortunately it did and we were there for five years.

The first challenge we had however was that Mt St Helens erupted in May 1980 just as we were getting ready to move. We also had a number of people who we asked to move to Spokane who were on their preview trip when the mountain erupted. Unfortunately, Spokane ended up covered by about 6 inches of ash and many of them couldn't get home for several days. Needless to say, several of these people declined our offer to come to Spokane. We ended up getting a number of people to move however but there was a time when the Spokane Division was affectionately known as the "Pompeii Division".

The original plan for Spokane was to move about $40M of manufacturing and about 70-80 people. Many of these were people in manufacturing who knew how to build the products we were transferring. We also needed a core group of R&D engineers that were familiar with the products and a core group in each of the other functional areas. We were very careful that the people we moved up would be what I would call "culture carriers". These were the people who understood and practiced the HP Way and could be role models for all the new people we would be hiring. They could also help us hire people that they felt would fit with the HP culture.


Spokane Division alongside Liberty Lake

When I arrived, I was the 12th employee and we were in a temporary building. We all met around the coffee pot each day to discuss what everyone was doing. Things were changing very rapidly however as new products and new people were moving up from California and we started hiring a lot of local people. Over time, we ended up building a new permeant building and hiring up to 600-700 people.

Our challenge was to figure out how to grow the business back to something like $100M again. We did a lot of brainstorming and had a lot of ideas but it started to get clearer when several of us attended a large international telecommunications trade show in 1983 that's held every four years in Geneva. I remember seeing a new device that Motorola, Nokia and Ericsson were talking about called a cell phone. It was a phone that you could carry with you, be untethered from the wall and you could have one phone number you could carry with you anywhere you went. We ended up helping Motorola, Nokia and Ericsson design the test systems they needed for their first analog phones that were introduced in 1984/5. From that point on, we helped write the specs and design the test equipment for each new generation of cell phones. Next it was a 2G system, then it was 3G and now they are in production on 5G and designing 6G. Because of this early and steady involvement, Agilent (now Keysight) is one of the leading suppliers of test equipment for this market.

The business started growing again and we continued to add people. Spokane was a great opportunity for me. It was my first big management job and it was kind of frightening in many ways. I realized that I was responsible for the success of a business and all of the people involved. Spokane itself was a very labor intensive town. Right across the street from us was Kaiser Aluminum which was a strong labor company. There were a number of strong labor companies in the area and my biggest fear was that we'd be the first division in HP to be unionized. So, we spent a lot of time educating and training people as they came on board about the HP Way and making sure it was practiced as we continued to grow.

One of the things I enjoyed about the job was that we had the opportunity to take a fresh look at how we organized and did things. There was no formula for how to do things as long as we stayed true to HP's values and utilized the HP systems and infrastructure as efficiently as possible. In many ways, this set the stage for me to do something similar when we started Agilent a number of years later.

By 1985 the division had grown to around 700-800 people and was doing very well. Just as I was getting pretty comfortable in the job, Bill Terry called and asked me to come back to California to run the Electronic Instrument Group (EIG).

ELECTRONIC INSTRUMENT GROUP (EIG)

By the mid 80's the electronic instrument business had grown to over 20 different divisions so Bill Terry divided them into two separate groups: the Microwave and Communications Group and the Electronic Instrument Group. Both groups shared a common sales force that also reported directly to Bill. The Electronic Instrument Group consisted of all of the non-microwave and communications businesses. It included the Santa Clara Division, Colorado Springs Division. Loveland Instrument Division, Lake Stevens Division, New Jersey Division, Boblingen Instrument Division and YHP Instrument Division. This diverse set of divisions was responsible for all of the general purpose electronic instrument businesses including oscilloscopes, logic analyzers, voltmeters, frequency counters, power supplies, etc. These products were also sold into a diverse set of markets including everything from aerospace/defense and communications to automotive and universities.

One of the challenges at this time was dealing with a corporate realignment of the sales forces across the company. Traditionally each business had its own sales force that was pretty product focused. This resulted in customers dealing with multiple sales forces but each highly specialized. Some customers wanted a simpler interface so there was a major realignment of all the sales forces around customers and markets. Since the computer sales force was much bigger than ours, this meant that some sales managers with a background in computers were responsible for our oscilloscope and voltmeter sales. We found it increasingly difficult to get the fields attention to our products and our sales priorities. We

also found it difficult to find the right level of training for the field. Little by little we were able to get back specialized instrument districts and then instrument areas but this took several years. Meanwhile, our business started to suffer and we began to lose market share. After a few years, the company went back to the old product sales model but put in place some account managers for more coordination in some of our larger accounts. Some people refer to this as the period when the company experimented with rows (customers and markets) and columns (products).

TEST AND MEASUREMENT ORGANIZATION

After several years of this group structure, Bill Terry and other senior leaders in HP decided that the test and measurement business was large enough and important enough that it should be integrated into a single organization structure with one leader. So, in 1990 I was asked to lead this new organization reporting to Bill. This was a surprise and shock to me but nonetheless I agreed to accept my new role.

Shortly after starting in this role, the Berlin Wall fell and we started to see an immediate reduction in the spending in our aerospace and defense business. Defense customers had always been a significant part of our overall electronic instrument business, perhaps as high as 30-40% at one time, but after the Berlin wall fell, it was clear that this wasn't coming back for a while. We started looking at new areas of growth and settled on communication, semiconductors and services.

However, we realized that to be successful in these new areas we needed to make a number of changes in our organization, our processes and systems and our culture. To accelerate this change, we undertook a multiyear change management initiative called "Project TMO". We did a series of workshops to develop an in-depth strategy for how we can win in our new areas of focus, how we need to align our systems and process with this new strategy and what cultural and leadership changes we need to make to assure our success. The overall result was a deeper understanding about change management that helped us navigate a number of changes in the business and the company over the next decade.

In late 1992, John Young retired as CEO of HP and Lew Platt replaced him. TMO went on to do very well in the 90's based on our new, revised strategy and the cultural changes resulting from Project TMO.

People would often ask me what made HP so successful in the instrument business. I believe it was four things:

One, a decentralized management structure where people didn't wait around for instructions from above and had the freedom to act and make decisions as long as they aligned with the company's overall objectives and values. This decentralized, participatory organization model kept the company relatively nimble and entrepreneurial even as it grew larger and more complex. Many of the most successful new products and businesses in the early days of HP came from this bottoms up rather than tops down planning approach. The idea of splitting divisions also played a role in this.

Two, a culture of innovation and making a contribution. This was part of our corporate objectives and was continually reinforced by Dave Packard and Bill Hewlett and the senior leadership team. We were constantly reminded to never build "me too" products and to look for new and innovative ways to make a contribution in everything we did. These contributions came from our strong commitment to leading edge technology along with our deep understanding of customer needs. These often led us to new and innovative ways to solve our customers problems. Products like our spectrum analyzers and network analyzers were great examples of this.

Three, a commitment to hiring and retaining the very best people and providing a culture to enable and support this. Hiring and developing top talent was a key part of every manager's job and everyone was expected to spend considerable time on this. The key to hiring and retaining the best people was to make sure that HP was a great place to work. This is where the "HP Way" comes in. Putting these values and beliefs into practice was the job of every manager and employee in the company.

Four, HP Labs played a critical role in helping us stay at the leading edge of technology. Their job was to look over the horizon for new technologies and practices that could disrupt our business. They would then do some of the early research on these ideas while the business often didn't have the time or resources to do it themselves.

After Lew became CEO, I continued to manage the Test and Measurement Organization and, at that point, Doug Carnahan managed the Medical, Analytical and Component Organization, also reporting to Lew. In 1997 Doug retired from HP and Lew asked me to take on responsibility for his businesses giving me responsibility for all the scientific instrument and component business in HP (i.e. all the non-computer businesses). These became the businesses that were spun out of HP a couple years later as a separate company.

AGILENT TECHNOLOGIES

By the late 90's HP's growth rate started to slow and competitors, like Sun and others, started doing very well in the computer business. Lew Platt and the HP board decided to hire McKinsey to give some advice on ways to address this. At this point we were trying to run an instrument business, a printer business, a PC business and a complex systems business all with the same operating rules under one HP umbrella.

One option was to create a conglomerate model like GE and let each business develop an organizational model and cost structure unique to its business and ruthlessly hold each management team responsible for the desired results. This meant paying people differently in different business and letting each business develop their own unique overhead structure. Given the strong culture at HP and a history of working together and letting people move freely between businesses, it was felt that this wouldn't work. We tried a lighter version of this by letting the business be more independent but it was hard to see a meaningful change in behavior.

Another option was to split the company into 2 or 3 parts and let the focus of investors and customers drive the organizations to improve their performance. Ultimately, after much discussion, this was the option that was selected. One proposal was to split HP into three parts: computer systems, consumer products (PC's and printers) and scientific instruments. The board ultimately decided that this would be too complicated and that we should do a two-way split first and do the other split later. So, the decision was made to split the scientific instrument and component businesses off from HP. This included electronic instruments, medical products, analytical products and semiconductor components.

Many people think that the reason for the split was that HP just got too big. It wasn't really that simple. Being part of a large multi-business company makes it harder to focus on your own unique business. Instead of thinking about how we fit into a computer company, as an independent company we could now focus solely on what we needed to do to optimize our own business. It was really a subtle mental shift but I found it was very important and made a big difference. The second reason for the split was that HP was not being valued for its scientific instrument and component businesses in the late 90's. Almost all the analysts who followed HP were computer analysts. Many of them either weren't

interested in the instrument and component business or didn't understand it so they didn't know how to value it. The third reason for the split, which I feel may have been the most important, was that the business models were changing and were very different. In the late 90's, the PC and printer businesses were growing very fast but the person who was running those businesses was worried about Dell, Compaq and other PC companies that had very different cost structures from HP. They didn't have a central research lab or the engineering salaries and employee benefits like HP. While these differences in cost structure might have been important to HP's success in the personal computer and printer businesses, they were the exact opposite of what we needed in the scientific instrument and component businesses. I lobbied for higher engineering salaries and more investment in central research so it was clearly not possible to optimize for both models under one HP umbrella.

There was a brief period of time after the board decision and the public announcement that I was one of the few people that knew of this decision. I knew we would need to work hard to get employees on board to the new company so the first thing I did was to call Jean Halloran and asked her to be my HR Director. We worked together to develop the messaging to our employees to get them excited about the new company we called "NewCo".

The split was announced on March 2, 1999. The employee reaction was shock, sadness and a lot of tears. Many employees had been with HP a long time and were proud to be part of such a great company. They had great regards for Dave Packard, Bill Hewlett and the culture of the company and there was a lot of fear about what was going to happen next. I felt it was critical that employees really understood the rationale for the split and the benefits to both companies going forward.

People would ask me, "What's going to be different in Agilent?" I felt in the late '90s, HP had gotten a little slow, a little too bureaucratic and there was a lack of accountability for decisions. For example, the company put together a team of perhaps 15-20 people to come up with new set of IT systems for HP and over two years they really didn't come up with much of anything.

Based on my observations and experience, I felt the big issues we needed to focus on in the new company were speed, focus and accountability., We needed to be much more focused on our businesses, our customers, our markets and our competitors. We needed to have a greater sense of urgency in responding to their needs and be more agile in responding to our markets. And we also needed to hold ourselves and each other accountable for our results since there was no where we could hide. I told our employees that since NewCo was roughly 1/8 the size of HP, everything we do is now magnified by a factor of 8.

My staff and I gave lots of talks to employees, and I would guess there wasn't an employee in Agilent that didn't know about SFA: speed, focus and accountability, that was kind of our mantra. But after a month of that, an employee came up to me and says, "That's great, but that's not why I joined HP," and then I realized that speed, focus and accountability were the new ideas, the new values that we were focusing on. But all of that must be built on our very strong foundation. That strong foundation is what I called the HP Heritage Values: HP employee values around trust, respect, teamwork and integrity. Those don't change. HP values around innovation and making a contribution. Those don't change. And the HP values around community and continuing to be good citizens in all the communities where we operate. None of these will change.

So, I told employees that "We're building a new Agilent based on the core HP values but we're putting new emphasis on speed, focus and accountability.". People started getting on board with that, but we

also did a lot of things to get people excited. For example, when we launched our name, we put a small group of people together to help come up with a new name. We had an equal number of men and women. We had people from Hispanic backgrounds, Asian backgrounds, European backgrounds, people with different language and cultural perspectives to help us come up with a new name. We also had a branding firm to help us put our ideas together and do some research on possible names. We considered a lot of different names and ended up with Agilent, because the word agile aligned with our desire for the new company to be not just fast but also nimble. We felt that our name could remind us every day of what we are trying to become.

In July, when we announced Agilent as our new name, we invited representatives from many of our major sites around the world to come to our name launch. We had probably 200 or 300 people at a theater in downtown in San Jose. We did all kinds of fun things and then we had a big reveal. Employees from all over the world could watch all this on video, but the people that were there could go back and tell their fellow employees, “Hey, this is really great. You know, I really like what's going on in this new company.”

And then we did it again. When we did our IPO, we did a road show in early November. Bob Walker, my CFO, and I did around 100 investor meetings in 15 cities in two and a half weeks. It was brutal, but we ended up at the New York Stock Exchange the night before our launch. The IPO was on November 18, 1999. We invited a couple of hundred employees from all over the world to come and be on the floor of the New York Stock Exchange the night before to help us celebrate. When I went up on the podium to ring the bell the next morning, I invited a number of employees from our major sites to join me. They could then go home and tell their friends what a great time they had.

The IPO was a huge success. HP sold 72 million shares of Agilent, or 16% of the shares outstanding, at $30 per share. The stock closed at over $42 per share for a valuation of almost $19B, making it the largest IPO in the history of Silicon Valley at the time.

Some people wonder why we only offered 16% of our shares on the IPO. It turns out when most companies split, they just dividend some percentage of their shares to their existing shareholders. Our investment advisors recommended against this since very few investors knew much about us. Almost all the analysts who followed HP were computer analysts and they really didn't know much about the non-computer part of HP. The risk was that many of the investors who receive the new stock would just sell it leading to a very poor result for HP and Agilent.

So, the idea was to do a “two-step” spin. It turns out that if you do an IPO for less than 20 percent of your total number of shares, there are no taxes involved. Also, by doing a road show, we could meet with investors who were interested in our business and educate them about our company. We could also meet with the analysts who would start covering us. After a couple months of talking to analysts and meeting with investors on the roadshow there was a lot of interest in our stock by the time we did the IPO, hence the great result.

The task of splitting the company was a huge one. Following the announcement on March 2, 1999, most employees in the divisions and groups going to the new company knew who they were but there was still 16,000 shared infrastructure people that need to be assigned to either HP or NewCo. Employees were given a choice but some needed to be assigned. To ease the stress, employees were allowed to move back and forth between companies using the internal job posting system until April 30 the following year. By June 30, 1999 all 16,000 employees were assigned. We also had to split 600 real estate sites and

11,000 patents before June 30 so we could restate previous financial statements and file for our IPO in November.

Dotty Hayes led this split process and did a terrific job! We used Deloitte to help with the analysis and decision-making process but splitting the company took an incredible amount of work by a relatively small number of people. The amazing thing was that everything was done on time so we could file for our IPO on June 30. To expedite the process of standing up our new company we developed a strategy called “clone and go”. We decided to just duplicate all the systems and processes we had at HP to get ready for Day 1 operations with the idea that we could go back and change them later if needed. This involved “cloning” around 3000 IT systems that we needed to run our operations as a separate company. We also had to separate HP subsidiaries in around 120 countries so we could begin legally operating as a separate company on November 1, 1999.

On November 1, 1999 Agilent started operating as an independent company, although we were still 84% owned by HP. Employees around the world held parties to celebrate the event. Day One operations went very smoothly and we were finally able to process our own orders, shipments and payments. At this point we were officially separated from HP and our stock started trading on the NYSE a few days later.

From November to the final separation from HP in June 2000, we had 3 quarters of earnings reports and numerous meetings with investors and analysts. This allowed the analysts and investors to learn more about us and get comfortable with what they know about the company. On June 2, 2000 the separation became complete when HP distributed a stock dividend of 380 million shares (approximately 84% of Agilent shares) to HP shareholders of record. Each shareholder received .3814 shares of Agilent for each share they owned of HP. We were now a completely separate company and employees around the world were invited to celebrate this day. I even did a video with me in a Ferrari convertible to help celebrate the occasion.

In 1999, Agilent’s revenues were around $8B so I started referring to Agilent as an “$8B startup”. We were an $8B company that had global reach and scale. We had the history at HP to build on but we also had a clean sheet of paper. My goal was to build on our heritage and take what we wanted from our past yet feel free to change things in ways that can make us even more successful in the future. It was up to us to decide what we wanted to change.

Our aspiration was for Agilent to be a high growth, high performance company so in the fall of 1999 we benchmarked other companies that we thought we might want to emulate. This included companies like Cisco, Intel and Dell who were doing great at the time although they’ve all had their challenges since then. The common thread of these companies was an obsession with customers, a bias for action and strong values around people and innovation. Starting in 2000 we launched a cultural transformation campaign called beAgilent and it included three parts: Stratos was an enterprise-wide effort to develop a strategy to accelerate growth, Excella was an enterprise-wide initiative to achieve operational excellence in everything we did and Vantage was an HR effort to assure we had the people practices we needed to support a high growth, high performance company. Like Project TMO years earlier, this initiative was aimed to energize the company around our aspirational goals of being a high growth, high performance company.

One of the first areas we looked at for operational improvement was our IT systems. As part of HP, we never really consolidated our IT systems so each one of our divisions all over the world had their own systems. When Agilent started, we had over 3000 systems to run the company and were spending about 8% of revenue on IT. Based on our benchmarking, the industry average spending on IT was closer to 2-

3% at the time so we knew we needed to change this. We did a bake off between SAP and Oracle and ended up picking Oracle. We then spent the next three to four years converting all of our old systems to new standardized systems across the company (no one got to tweak the system for their business) and took our IT spending numbers down to 2-3%.

As part of the enterprise look at our strategy, we decided to sell our Medical Products business in early 2000. At that time, hospitals were beginning to consolidate their operations as well as their purchasing departments and purchase decisions were more in the hands of hospital administrators than the doctors. Companies like GE and Siemens would then come in and offer to sell large packages of equipment including MRI machines, CAT scanners and X-Ray machines and offer financing and a support contract on the whole deal. Unfortunately, they would sometimes throw in some patient monitoring machines and cardiac ultrasound machines for free and these were the businesses that we were in. It was clear that we needed to either bulk up and offer many of the same products they do or sell the business to someone that had these and wanted to improve their competitive position relative to GE and Siemens. We found the perfect partner in Phillips and decided to sell the business to them. The sale for around $1.7B was announced in the fall of 2000 and the transaction closed in mid-2001.

Following the sale of our Medical Products Group we decided to focus on the higher growth life sciences tools business. The mass spectrometers and liquid chromatographs in our Analytical Products Group were already participating in this market and we increased our investments in those businesses. We also introduced a DNA array product that was developed in HP and Agilent Labs using ink jet technology from HP's Printer business and a product using microfluidic technology for high throughput screening applications. This was the beginning of a major new area of focus for the company.

2000 was an excellent year for the electronics industry overall and it was a great year for Agilent to start. Total Agilent revenue for FY 2000 was $10.8B, a growth of 29% over 1999 results. A lot of this growth came from communications companies that were building out networks for broadband, mobile and internet applications. Unfortunately, 2001 was the year the "Dotcom Bubble Burst" and all this came to an abrupt halt. From Q4 2000 to Q3 2001 our orders dropped by almost 50% including a large number of cancellations from orders in 2000. In April we announced a 10% pay reduction across the whole company but as the year went on it was clear that this downturn wasn't going to recover soon and we needed to scale back the size of the company to our new lower level of business. Walter Hewlett was on my board at the time and I remember asking him what his dad would have done in this situation and he said his dad would do whatever he had to do to save the company.

So, we made the difficult decision to reduce our work force by 4000 people in July and then another 4000 people in November. This was very hard to do since these were generally very good people who had contributed a lot to HP's and Agilent's success in the past. I decided that as long as we had to do this, we would try to go overboard and treat everyone impacted with dignity and respect and ease the transition as much as we could. We had a generous severance bonus and actually tried to get people placed in other firms if we could. I also asked every manger and supervisor to personally talk to each person being let go and tell them that this wasn't about them…they did a great job but we just needed to resize the company. One of things I'm proudest of about this is being #31 on Fortune Magazine's Best Places to Work survey in 2001 in spite of our layoffs. In fact, there was an article about Agilent in Fortune's March 2002 issue, when they published their 2001 results, titled "How to Cut Pay, Layoff 8000 People and Still Have Workers Who Love You".

Overall revenue for 2001 was $8.4B, down 11% from 2000 when restated without the Medical Products business. Net profit was negative however and we were doing everything we could to preserve cash. Fortunately, in August of 2001 we received $1.7B cash from the sale of Medical Products that really helped. However, our markets continued to be very weak through 2002 and most of 2003 with Revenue around $6B for each year and net profit negative. We worked hard to find ways to reduce our costs while at the same time fundamentally transforming our business so we can be in an even stronger financial position when the business turned around. We consolidated facilities and many of our manufacturing operations and back-office functions. We continued with the transformation of our IT systems and we also continued to bring new products to the market to strengthen our competitive position and drive growth.

After lots of hard work, we were able to return to profitability by the end of 2003 and had an excellent year in 2004. Our 2004 Revenue grew 19% to $7.2B and we achieved over 7.5% net profit. By the end of 2004 I felt the company was in very good shape again but I was pretty burned out by the last 3 years. In October, during a board trip to Singapore, I told the board that I would like to retire by the end of 2005. During the coming year I will have been CEO for 6 years and with HP and Agilent combined for almost 40 years. I had promoted Bill Sullivan to COO in 2002 and asked him to help manage all of the operational transformation projects we had launched as we worked to return the company to profitability. Bill and I worked very closely over these years and I could see that he was ready to be a CEO. Fortunately, the board agreed and they announced him as CEO in May 2005. I stayed on through the end of the fiscal year to help with the transition and introduce him to many of my contacts.

Since then, Agilent has continued to do very well and even split again when Bill retired in 2015. Agilent Technologies in now a life science tools company and doing well and Keysight is an electronic instrument company with a strong focus on communications. It’s also doing very well. It’s hard to believe it’s been over 25 years since Agilent was launched but I’m proud of how well the company has done and how well it’s navigated the many challenges it’s had to face along the way. My hope is that the original HP Way is still alive and well in both companies.

FAMILY

I would be remiss if I didn't acknowledge the help and support of my wife, Jimi, and my family of three kids during this. I couldn't have done any of this without their help and support. When I talked to students and younger people entering the workforce, they would often ask me how I managed work life balance. The best answer to this question came from Carol Bartz, who was the CEO of Autodesk at the time. We were on a panel together on this subject and she said that there is no such thing as work life balance. That implies that at any point in time you can be perfectly balanced and that is not possible to achieve. There are times when you need to prioritize work, like board meetings and important customer meetings, and there are times when you need to prioritize family, like birthdays, graduations and school plays. The only thing you can realistically do is to look at it over some period of time, like 6 months or a year, and say that you spent quality time with your family and quality time at work. That's how I tried to think about work life balance.

I always tried to be home by 6:30pm to have dinner with my family and to reserve quality time each weekend for some family activity. This wasn't always possible but it probably worked most of the time. I also scheduled all of our vacations around the kid's winter break, spring break or summer vacation. Work life balance is a matter of priorities and how you choose to spend your time. Family was always a high priority for me. I am fortunate to have a wonderful family and we continue to have a lot of great times together.

EPILOGUE

After my retirement, I spent the next almost 20 years on corporate and nonprofit boards. Even though the business challenges were different, I found the experiences I had at HP and being CEO of a Fortune 200 company helped me be a better board member. I enjoyed learning about new businesses and meeting lots of new people. When people asked me why I went on boards I said, "I spent my early years going to

school and learning to do stuff, I spent almost 40 years in my corporate jobs doing stuff and as I retired, I wanted to share some of the things I learned in those first 60+ years".

As I reflect on my 40 years at HP and Agilent, I think about how fortunate I was to be in the right company, in the right business at the right time. Since I started my journey in 1966, I saw the early days of semiconductor devices and integrated circuits and the evolution and growth of computers, printers, storage, networking, software, personal devices like cell phones, the internet and now AI. I call this the "Golden Age of Electronics" and I feel very fortunate to have been part of it. But while the technology advances have been great, the thing that stands out for me most are the people I've met and had the privilege to work with over the years. Someone once told me not to focus too much on goals in my career but to make sure I enjoy the journey. Well, thanks to all the great people I've met and worked with over the years, it's been a great journey!