

# **EDWARD W. BARNHOLT**

## **ORAL HISTORY**

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**COMPUTERWORLD HONORS FOUNDATION  
INTERNATIONAL ARCHIVES**

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**Edited Transcript of a Video History Interview with  
Edward W. Barnholt  
Chairman, President and CEO, Agilent Technologies**

Location: Agilent Headquarters  
Palo Alto, California

Date: April 7, 2003

Interviewer: Daniel S. Morrow (DSM)  
Executive Director, Computerworld Honors Program

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DSM: Today is Monday, April 7, 2003 and we're interviewing Mr. Edward E. Barnholt, the Chairman, President and CEO of Agilent Technologies. The interview is taking place at Agilent Headquarters on Page Mill Rd in Palo Alto, California. This interview is made possible by the Chairman's Committee of Computerworld Honors, of which Mr. Barnholt is a member. The interviewer is Dan Morrow, Executive Director of Computerworld Honors. The honors program was established in 1988-89 to seek out, honor, and preserve the history of the global information technology revolution by Roger Kennedy of the Smithsonian Institution's National Museum of American History, Patrick McGovern of International Data Group, and the Chairmen of forty of the world's leading information technology companies. This oral history is being recorded for distribution to more than 140 national archives, museums, universities and research institutions in more than fifty countries on six continents around the world, and for the program's archives on-line. Without objection, the complete video, audio and transcripts of this interview will become part of these international scholarly research collections and made available in complete or edited form to the general public on the worldwide web. This discussion, however, is private and should any participant wish to withhold from the public record all or part of the recordings of these sessions, this request will be honored for a period not to exceed twenty-five years. All present here are honor-bound to respect such a request, and by remaining here, they accept the personal and professional and legal responsibility to abide by this agreement. With no objections being heard, we will proceed.

## **Early Years in the East**

Would you tell us when and where you were born and something about your parents?

EWB: I was born in New York City back in 1943. My father grew up in South Jersey and he was raised by his aunts. His parents died when he was very, very young, so he doesn't know very much about his family. In fact, we have not been able to trace any roots on my father's side back beyond his aunts. My mother was born in Pennsylvania and grew up in Nanticoke, Pennsylvania. They met at Drexel University in Philadelphia, which was a great engineering school. My father was a civil engineer. After he graduated, he worked in New York City on Long Island putting in some of the new Long Island Expressways, which are still there to this day. He worked on that when he got out of school, and they married after my mother graduated. I was born probably five or six years later in New York City.

We lived in Long Island the first couple years after I was born in a place called Jackson Heights, which was right at the end of the runway of LaGuardia Airport. I don't have any memory of that at all other than what I've heard and what my parents have told me and what some of the pictures show. It was a very modest beginning in some apartments right at the end of the runway at LaGuardia.

DSM: You were born in 1943, in the middle of the Second World War from the United States point of view. What were some of your earliest memories of childhood? What do you remember about New York in the late 1940s—1947, 1948?

EWB: My father was working on a civil engineering project and actually went down and spent about nine months in Oak Ridge, Tennessee. He was involved in some of the Manhattan Project, mostly from the construction and civil engineering side, not the nuclear side.

One of my first recollections was living in Tennessee. I think I might have been close to one-and-a-half years old. When we moved back, we moved back not into Long Island, but New Jersey. I spent most of my early childhood in New Jersey. I have fond memories around the Paramus area, a place called Rochelle Park, which is a very, very small community. Right now, it's right about where the intersection of Garden State Parkway and Interstate 80 come together in New Jersey. I used to pick berries right there. Today, there are about six hotels there. It's a major intersection. My house was literally a stone's throw from all those new hotels. Then we moved to a town called Ridgewood, New Jersey, which was a little bit further to the west. I spent most of my early school years in Ridgewood.

DSM: Tell me about beginning grammar school. When you started school, had they already taught you to read?

EWB: My mother was a schoolteacher and she was a great believer in school. Education was always very, very important. Wherever we lived, she always wanted to make sure that I went to the best schools and got the best teachers. Even when we later moved to California, the decision on where we located was all based around schools. Education was a very important part of my life very early on. I was an only child. I didn't have any brothers or sisters, so we went places together. We traveled not extensively, but we would go up to New England and different parts of the East Coast as a family. We would always go to the historical sites. My Dad would take us to some dam or bridge, just to see the scientific side of things. Education and learning was a very important part of my upbringing.

DSM: Did you want to be a civil engineer when you grew up at first?

EWB: At first, I think I did. When I was very, very young I wanted to be a civil engineer. Then later on I went beyond that and decided I wanted to be a mechanical engineer, then an aeronautical engineer and finally found my way into electronics. I kind of always was in engineering, but different kinds.

## **The Power of Sam Birney**

DSM: In your early days in grammar school, are there teachers that you remember that stood out?

EWB: Not so much. My early grammar school was literally a one-room schoolhouse, so it was all the different grades mixed together, I think Kindergarten through 3rd or 4<sup>th</sup> grade.

We just pretty much advanced at our own pace. There wasn't a real structured program. I don't have a lot of recollection of any particular teacher or event, even in Ridgewood. I went up to 6<sup>th</sup> grade in New Jersey. Even though these were great schools and I know that I had great teachers, there wasn't any one particular teacher that stood out.

Probably the one teacher that stood out for me was after we moved to California. My Dad decided to hop and move to California. Someone he had worked with in New York had come out and started his own company in Pleasanton, California—Livermore, California—that serviced the nuclear power industry. Dad worked there for a while and then ended up working at GE in San Jose in their nuclear power division when that was a big thing. We located in North Hillsborough in the move to California. Again that was totally based on the quality of the school system. This was about 1955.

We moved in around November or December, and I was in 7<sup>th</sup> grade. I went to another school in Burlingame for a while—then around February or March of that year, my 7<sup>th</sup> grade teacher, Sam Birney, sat me down and gave me a scolding. He said, "You can be better." I was not a real serious student. I wasn't really paying much attention. I did pretty well. I was getting reasonably good grades. But he said, "If you really applied yourself, you could do a lot better at school." He just rode me all year. Every time I didn't do quite well enough and live up to his expectations, he would sit down and chat with me again and say, "I know you can do better. I know you can do better." That was really a turn-around year for me, 7<sup>th</sup> grade. I always look back to that and to Sam Birney. I think from an education point of view, he turned around my whole view and made me a serious student that really wanted to learn. I really valued learning, appreciated learning, sought out learning. Again I think that was because of Sam's curiosity, his persistence, his intensity around education. He just was a wonderful master teacher.

DSM: Is your Dad still alive?

EWB: My Dad is ninety-three-years-old and he's still alive. He is in amazingly good health. His hearing isn't great, but he plays golf two or three times a week. He still is very healthy and I hope I have his genes.

## **Growing Years, Building Character**

DSM: Does your Dad have favorite stories he likes to tell about you?

EWB: I had a reasonably strong will as a child. One of their favorite stories was when I learned to ride the bike. I didn't know how to stop the bike, so I'd just crash into the garage door as my way to stop. Rather than quit riding the bike, I just continued to crash into the garage door. It wasn't great on the garage door, but at least it made me a better biker and I eventually learned how to stop. I think Dad uses that as an example of the fact that nothing is going to slow me down.

DSM: Were there lots of kids around when you were small?

EWB: Not a lot. My parents didn't have lots and lots of friends. They had some very close family friends who had kids my age that we did things with. But I wouldn't say there were a large number of friends.

When I was in New Jersey, I was crazy about baseball. That's when the New York Giants, Dodgers and Yankees were in New York. I knew the batting average of every player and the earned run average of every pitcher. I would get up in the morning, go to school and play baseball before school. I'd play baseball at recess. I'd throw my lunch in the garbage and not eat lunch and play baseball at lunch. I always played a lot of sports.

DSM: 1955, you move to North Hillsborough and you go through Junior High—1955-1957. Did you have any best friends or rivals in High School or Junior High that you remember that really had an impact?

EWB: I had some great friends. North Hillsborough was a very small school. There were only two classes—7<sup>th</sup> and 8<sup>th</sup> grade classes. I literally knew all the kids. When I first moved to California, I went to a much bigger school and it was difficult to meet people and feel part of the group. But when I went to North Hillsborough, I met all the kids. It was great. There were several people I stayed very friendly with through High School. In fact, even to this day, some of my best friends are high school friends that we've stayed in touch with over the years.

DSM: Anyone we should be sure to track down?

EWB: I don't know. I could give you the names of some people, but I don't know if I want the stories!

DSW: This was also the early days of some really exciting technology. Do you remember your first television set?

EWB: My first television set was back east. I remember sitting around the radio in my grandfather and grandmother's place in Nanticoke, Pennsylvania just listening to the radio show—The Lone Ranger and all those things on the radio. I think it was just before we moved to California in the early 1950s that we got our first television set. That was a big thing, sitting around and watching the TV shows. I was a big fan of The Lone Ranger, Hopalong Cassidy, Howdy Doody and all those 1950s-type TV programs.

DSM: In 1957, the major event was the launching of the Sputnik and the satellite program. Do you remember that and the effect that had on you and your classmates?

EWB: I remember that. At that time I wasn't into technology as much. I remember just being impressed by the achievement. At the time, I wouldn't say that it really stimulated anything specific. I was just beginning high school, so I was pretty young.

I just remember it as being a significant event and something that my parents talked about a lot as being an amazing event. But it's not necessary an event that steered me into technology or engineering itself.

DSM: From 1957-1961, from Sputnik to the election of John Kennedy, you were in High School. Were there teachers other than Sam Birney, who had a real effect on you in high school?

EWB: There were a couple, mostly in the math program. The high school I went to was great. They had the advanced college prep classes, and I took all those. I think it was a great preparation for college, but during high school was really when I did a lot of leadership things. I had been in scouts earlier all the way along and went through Eagle Scouts, and the Silver Explorer, and all those things. In high school, I had never planned to run for any office, but some of friends from North Hillsborough said, "Why don't you run for sophomore class president?" I did and I was sophomore, junior and senior class president and student body president. I did a lot of leadership things in high school, which I look back to as a real turning point for me because it really gave me an opportunity to lead and work with other people and have a chance to develop some confidence around leading.

DSM: Did you go to the National Jamboree?

EWB: I never went to one of those Nationals. There was a California one, but I didn't go to the National one.

DSM: Philmont?

EWB: No, I didn't go to Philmont, but I did go to one someplace in the East Sierras—I can't remember the name of it—that was some kind of a California State program.

DSM: Talk a little bit about Scouts. In my own experience, the training has been invaluable. Talk about what it was like to be in the Scouts.

EWB: I think there are several things. One is that it was a relatively small group of guys that was in our scout group, so we got to know each other very well. When you did camp-outs and go on hikes and do all of these kinds of things, you really get to know people very well and form some very good friendships. You also learn an appreciation for the outdoors.

I found Scouts was something that gave me a goal—the fact that you could work on merit badges and do your different ranks in scouts. I tend to be very goal-oriented. That gave me something that could really focus me and give me something to shoot for. I thought Scouts was a very valuable experience. I think it did teach you a lot about life and a good sense of values and ethics, working hard and being part of a team, playing fair. I think sports and Scouts and all these leadership things that I had the opportunity to do all taught you a lot about getting along with others, winning and losing, playing fair, and building up a sense of values and ethics.

DSM: Very early formal definition of honor and integrity as well. Your own personal sense of what makes for an honest man, is that rooted in your parents, or in your church, or in your scouting experience?

EWB: Probably mostly in my parents. We went to church, but we weren't real involved in the church. My parents were ones that were always saying, "Tell the truth, be honest, be true to yourself." They put up some very strong values. Frankly, I didn't want to let them down. One of things I discovered is people can motivate themselves if you provide the freedom and the expectations for people to achieve certain goals. My parents never put anything unreasonable on me at all, but they always expected me to be honest, be trustworthy and not to let them down. Hopefully I didn't.

## **The 1960's: Change, Turmoil & Engineering**

DSM: Stanford University. Tell me about the decision to go to Stanford.

EWB: I had reasonably good grades in high school, and a lot of leadership things, and a lot of sports. I played many different sports. My college counselor in Burlingame said, "Don't even bother with Stanford because you probably won't get in if you don't have a 4-point." I think I had a 3.9 something. But they said, don't bother if you don't have a 4-point. I said, "I'm just going to put an application in and see what happens." Fortunately, I was able to get in. I did apply to a number of schools in the East Coast as well as Berkeley and others, but Stanford had a special attraction. It was close-by and being an only child, I felt like it would be great to be somewhere close in California. I did enjoy the weather and the lifestyle out in California. And I liked Stanford, just in terms of the kinds of programs.

At that point I knew I wanted to be an engineer; I just didn't know what kind. I thought I wanted to be a mechanical engineer. They seemed to have a pretty good program. It wasn't until I actually got into Stanford and started taking classes that I really appreciated what a great university it was. I don't think I really knew when I was a senior coming out of college at that point in time; it didn't have quite the same national reputation that it does now, even though it was very well known at the time.

DSM: You're at Stanford at a particularly interesting period in the history of the country as well from 1961-1965. I guess about your junior year, John Kennedy was assassinated Do you remember where you were, what you were doing?

EWB: Yes, I remember two things about college from an external world point of view. One is the Cuban Missile Crisis. All of us guys were sitting around glued to the TV convinced that we were all going to get called up for war because it was clear that this was a big deal. If Khrushchev and the Russians didn't back down, then probably we were going to have a major war. At that time, with the draft the way it was, we knew that we would probably all get called. That was something I'll never forget—for weeks just watching every detail of the Cuban Missile Crisis.

But then I remember John Kennedy. I was walking to class and I overheard some people talking. I asked what happened and they said that John Kennedy had been shot. Walking around that campus was like a ghost town that day. People just literally were in shock. Nobody talked. There was no fun or anything. People were just in a very somber mood. It was the first time I had ever seen the entire campus just have a somber face on it. Everybody went and was glued to the TV watching, trying to understand what happened, trying to put some reason around it.

I think it was really an interesting time, the 1960s, because of Kennedy being shot and later Martin Luther King and Robert Kennedy and, of course, the Vietnam War. It was a period of great change and turmoil, I think, in the country. As a student, it was a time that created a lot of anxiety because we didn't know if we were going to be all drafted and go to war. Many of my friends, of course, went to Vietnam and it was just a very, very challenging time. Student protests. Do you protest? Do you not protest? Where do you stand on all these issues? How do you protest if you disagreed with things? It was a period of troubling times and a time of a lot of introspection.

DSM: I would like you to talk a little about what it was like to be in school in California in the 1960s—being at Stanford, with Berkeley in the north—and also some of the teachers that made a difference.

EWB: I had a lot of friends that were at Berkeley, so I would visit from time to time. Berkeley was kind of the hot bed of the anti-war movement and had a lot of protests. Stanford had a little bit of that, but Stanford was almost a community in of itself. It was somewhat isolated, not quite as active as the Berkeleys and others of the world. It was a very troubling time to see all the things that were going on in the world, with the assassinations that had occurred—John F Kennedy, Martin Luther King, Robert Kennedy—and then going in to the Vietnam War and the build-up there.

You really didn't know what to believe, who to trust, were you getting the right story or not the right story. I think it was a time when people started to question some of the institutions that they never questioned before. When the government said this, people believed in various organizations. It was a time of a lot of questioning and maybe, perhaps, a little bit of distrust of some of the large institutions. As a student, it was an interesting time because some of my best memories of college are just sitting around with a bunch of guys just talking about what was going on in the world and what it all meant.

I often say that half of what I learned in college is from the other people that I went to school with because these conversations. We just talked about philosophies of life and what's going on in the world, what we want to do with our lives—these are all very, very interesting conversations with some interesting people. I think one of the things I really appreciated about Stanford was the quality of the other people I went to school with. It was just really neat to be there with such a talented group of people. A lot of my learning was through the interaction with other people.

DSM: You had friends who were liberal arts majors?

EWB: Yes, I had some friends who were liberal arts majors, and I had friends that were history majors. Of course, most of my friends were in engineering that I had met in college because we had taken classes together.

DSM: At least from my recollection, the gulf between liberal arts majors and the engineers was almost as wide as those on the right and left.

EWB: The difference I found was that my liberal arts friends would enjoy the quarters up until the last two weeks and then they would study like crazy for the finals and get good grades, where the engineers had to study all quarter.

DSM: Speaking of engineering, were there teachers at Stanford that really made a difference in your life and career?

EWB: Yes, I think probably the teacher who made the most difference in my career was a man named Jim Gibbons—Professor Gibbons. I took the Introduction Electronics course. As an engineer they wanted you to take an introductory classes in mechanical and electrical and chemical engineering, just to have a fairly broad engineering background. I think by that time I had already moved from mechanical to aeronautical engineer, and by the time I took this electronics class from Jim Gibbons it was fascinating. I really had never done much with electronics prior to that. What Jim did that made it very fascinating was talk about the transition from vacuum tube technology to semiconductor technology.

Right about that time was when the technology was changing. He brought in a big box of vacuum tubes one day and said, “I want to talk about history. These are vacuum tubes. These consume a lot of power. They get hot; they burn out. They have a limited life.” He showed a transistor. “See how this is? It doesn’t use as much power; it lasts a lot longer.” Then he says, “Let’s forget about history and let’s talk about the future.” So his whole class was really around transistor technology. I got very fascinated by that and he became my advisor later when I got my masters degree. He went on to become the head of the engineering school and then the provost of the university.

DSM: Given your Dad, who was an engineer, but also given your Mom, who was an educator, you never considered staying in the educational environment?

EWB: Actually, I love to teach. I did at one point in time. In fact, I thought I would go out and work for a while and then go back and get a Ph.D. and go into teaching. During my engineering time, I actually interned at a company in San Carlos, California for two summers. I got interested in just building things—just the hands-on, taking a problem and trying to solve it and come out with something that worked. It was very exciting to me. I decided that I would actually not pursue the academic side of my career, but to pursue the more practical side. But I always knew, I think because of my background in high school and the other things that I did, that even though I loved technology that I wanted to deal with people. I took advantage of the opportunity to learn engineering.

When I got my undergraduate degree, I realized that as an undergraduate, I really didn't know a lot. Stanford teaches a fairly theoretical program. You don't come out of Stanford; at least I didn't, with a lot of practical knowledge about how to design circuits. I went on and got my masters degree so I could feel more confident of my engineering abilities. I joined HP right after that. I felt it was important to get as much education and training and engineering as I could. I started in R&D and spent three years in research and development at HP and then I moved more into the business side and the people side of the business.

## Finding HP

DSM: Twenty-three-years-old with a MA. How did HP find you, or did you find HP? Given your love of people and teaching and your love making things really work, it looks like a perfect match. How did you find each other?

EWB: It was a complete accident. When I graduated I had decided that I had spent a lot of years in California, especially on the Peninsula here. I had gone to high school here and I had gone to Stanford. I wanted to try a different part of the country. I interviewed in Texas at PI; I interviewed at Bell Labs in New Jersey; I interviewed at Motorola back in Chicago. It seemed like every time I visited one of those places, there was either a snowstorm or a windstorm or something. I'd come back to California and it was beautiful and sunny. All of my friends were out enjoying the sunshine and the grass at Stanford. And I said, "You know, I could do a lot worse than staying right here."

I started asking some friends of mine, who had graduated a year before, about the companies they went to work for. I had interviewed with Philco-Ford and some other California companies, but this one friend of mine went to work for this company called Hewlett-Packard that I only knew about through this instrumentation that we used in the labs. All the lab equipment at Stanford was HP. I just thought that the company made very good equipment. I didn't know anything about the company, except for the fact that they made good equipment and my friend thought it was a really great company. I did not interview HP on campus, I just called my friend and said, "Is there any way I can come over and get an interview?" And he said, "Sure." He set up an interview for me.

DSM: Do you remember who did that first interview?

EWB: There were many people who interviewed me: one was a man named Doug Gray, Ned Kuhn, John Shanahan, John Mink. It was interesting at the time. HP gave technical exams on the interview. I'll never forget—Doug Gray gave me the technical exam. He had a stack of papers this high with questions. He started asking. The first question was pretty easy. The second question on the second paper was a little harder. By the third question, it was starting to get really hard, and he was only three in a stack of about thirty.

DSM: Did the other companies where you interviewed give you similar tests?

EWB: Some of them did, but not as thoroughly as HP. The most rigorous technical exam I had was by far at HP. I made it through the exam and I ended up with a joint offer because I told them that ultimately I wanted to move into marketing. I got a joint offer from R&D and marketing at HP, which again, was perfect because the other companies didn't really think about where I wanted to go long term. They just wanted me to work on this project now. I decided that I really liked the people I met; it seemed to be a great environment. The people were very friendly and open. They followed up to make sure I had all my questions answered. They went the extra mile and seemed to care for me as an individual unlike some of the other companies I had interviewed with.

DSM: That year you took to get a masters degree seems to have paid off in a couple of ways: one, given the exam; two, given the friend that was at HP. Otherwise, you never would have been there. Was it during this period that you began to be interested in the marketing side as well as the engineering side?

EWB: I really had never heard of marketing until I joined HP. I went to work in the lab and the plan was I was going to spend one to one-and-a-half years in R&D and move into marketing. But after a year, year-and-a-half, the lab manager, who was a very persuasive individual whose name was Paul Ely, every time I said I was ready to move into marketing, he said, "I really want you to stay in R&D." And he gave me another project. I ended up staying in R&D for almost three, three-and-a-half years in research and development. I look back on that as a great experience because it gave me a very solid technical foundation to understand the business. I had worked on a number of different projects. I had some projects cancelled—I know how tough that is. I had some projects that were successful and some of my projects go into production. I had the chance during that period of time to experience the whole range of experiences for an R& D engineer.

## **Encounters with Dave Packard and Bill Hewlett**

DSM: Beginning in 1967—you had been at HP, I guess, less than a year—you met Dave Packard. Could you tell us that story?

EWB: There were a number of different meetings that stick out in my mind. I was handed a new engineer's dinner. They used to invite new engineers to go through an orientation program, where we would spend time in different parts of the division—work down in the machine shop, do things on the production floor. When you were done with this, there would be a dinner with Dave or Bill or a few of the management of the division at the time. I remember I was sitting around talking and everybody sat down. The only seat left was the one next to Dave. I ended up sitting next to Dave Packard. My wife—she was my girlfriend at the time, but she was there at the time—we were both incredibly struck by how down-to-earth both Dave and his wife were. They were very interested in us as individuals. He asked me what projects I was on, how did I like HP, all about my background.

It was just a very enjoyable evening. It was like talking to somebody you've known for a very long time and someone who was genuinely interested in you as a human being.

DSM: He and Bill Hewlett. They had been working together for over twenty-five years at that time. Was it really scary to sit next to him?

EWB: It was very scary. When we realized that they were the only seats left, we kind of trembled and wondered whether we should sit down or not. But Dave and his wife just made it very, very easy and very comfortable for the entire evening.

DSM: Tell us about your first encounters with Bill Hewlett.

EWB: I had been with HP for about six months and I had started to develop a stereo system along with other engineers in the lab in the evenings. In those days, they encouraged you to work in the evenings if you wanted to and use parts out of the lab stock to build things, just as a way to get more experience and to become better engineers. There were some engineers in the lab who were building a stereo and I asked if I could join them. There were six or eight of us and we were all working on this. I was working on the power amps; someone else was working on the chassis and the industrial design. It was quite a project. After about six months, Bill Hewlett calls the lab manager, Paul Ely and asked if anyone in lab knew anything about stereos because his stereo system broke and he needed someone to fix it. Paul Ely says, "Yes. I have this new engineer named Barnholt. Bring it on over." Next thing I know, Bill Hewlett shows up with this KMH stereo system. Paul Ely walked over as the lab manager, and then John Young, who was the division manager at the time—later CEO. Since he knew that Bill Hewlett was in the lab, he walked over. Here were all three of these guys standing around my desk chatting away. I started to take the stereo apart—I was trembling a little bit. Actually this was before the dinner. Then Bill Hewlett got called away. He said—this was about 11:00 in the morning—"I'll come back about 2:00 or 2:30 and pick it up." I worked all the way through lunch and I couldn't find the problem. It was a really tough problem to find. Finally, around 1:00 or 1:15, I figured out what the problem was and I fixed it. Sure enough, right at 2:00 Bill Hewlett came back and Paul Ely came over and John Young. I was sitting there cleaning the filters to get it working properly again and Bill Hewlett said, "Oh, let me do that." I stepped aside and he cleaned his own filters because he liked the music a certain way. And I buttoned it all up and he went off. I always remember that. Certainly Bill Hewlett could afford to have his stereo fixed; certainly he could afford to buy a new one. But the idea of having one of his engineers do it, gave him an opportunity to interact with some of his people. Again, that was my first encounter with either David or Bill. I was just so impressed with how down-to-earth he was, how real, and just really a nice person.

DSM: One of the glorious historical artifacts in your collection here, is that case of beer out in the cabinet. Talk a little bit about the atmosphere at Hewlett Packard and the culture of HP at this time.

EWB: When I joined the company, it was roughly \$200 million in revenue and I think about 3,000 people. This was December 1966.

In fact, as an aside—there’s an interesting story there about how I joined in December. It took me an extra quarter to get my masters degree. It took me four quarters, so I finished in December. I was going to take a quarter off and learn to ski. So I had a job as a bartender at Boreal Ridge ski area up in the Sierras. I told HP that I was going to start in April and they said, “No problem. That would be fine.” Literally, the day after I finished and graduated from Stanford, my draft board called. Of course, this is in the middle of the Vietnam War. They asked, “What are you doing, now?” And I said, “I’m working at Hewlett Packard.” I hung up the phone, called Boreal Ridge and said, “Sorry, I’m not coming,” called HP and said, “Can I start early?” So I started in December instead of in April. Fortunately, through some government contracts that HP had, I was able to get a deferment. HP was making some equipment used for repairing and calibrating different kinds of equipment that was used in the Vietnam War.

## Meeting Jimi

DSM: I don’t want us to get too sidetracked here, but I know that you are very devoted to your wife and family. When did you meet your wife and tell me a little bit about that?

EWB: Yes, certainly. Before we do, let me get back because you had asked me about the environment in the early days. I got sidetracked. The environment then was really a lot of fun. Again, it was a small company—a couple thousand people with a \$2 million of revenue and lots of new engineers joined at the same time. It was a fun group. All of us, generally, were single at the time. We found that we had a lot of things in common. We went skiing together; we went rafting down the Russian River together. There was a real bonding of many of the people that joined HP. The company was young; it was growing. There was a sense that anything is possible. It was a great place to work and people enjoyed the company. They enjoyed Dave and Bill. It was actually through the things that we did together that I did meet my wife.

When I did get out of college, I did want to learn to ski. The roommates that I moved in with were both Stanford graduates. In fact, one of them was the one who got me the job at HP. Another one was a mechanical engineer who had received his masters at Stanford. The three of us lived together in Palo Alto. They had rented a ski cabin in Squaw Valley for the winter. I decided I’d go up with them and join in with them. There was about ten of us that all rented a cabin together. We went up almost every weekend. This was in the 1960s. It didn’t matter—storm warnings, stay out of the Sierras; we’d go up anyway because we wanted to be there and ski in the fresh snow.

DSM: Who were these two friends?

EWB: One was one that I had met at Stanford. He was the one who got me the job at HP. He had graduated with his bachelors at Stanford just before me. His name is Dave Gilday. He was the best man at my wife’s and my wedding. We were just very good friends through college. The other friend was somebody I knew a little bit at Stanford, but he was a good friend of Dave, and they were in the same fraternity together. His name was Kim Clark. Kim was from Salem, Oregon.

When I was going up there skiing every weekend, I didn't know how to ski, so all these good friends of mine who had skied for a couple of years before me, took me up to the top of these really difficult runs and they'd head down before me. I would just crash and burn and have a yard sale all over the slope. About March of that year, Kim Clark, who grew up in Salem, Oregon, brought a friend of his up skiing that he knew in high school. Her name was Jimi. He went to high school with Jimi. She went to Oregon State and came down here to teach. She was teaching in Sunnyvale and he just invited her up one weekend to ski with us. As I was having my yard sale down the slope, Jimi was actually nice enough to stay behind and help me pick up my hat or my goggles or my poles, and everything. We got to know each other pretty well and started dating at that time. That's how I met Jimi.

## **Making a Difference**

DSM: You have played a lot of sports. What did you learn from those experiences?

EWB: Lot's of leadership things. Sports have always been a big part of my life. Playing sports has always been a way for me to meet people and learn a lot of lessons about life.

DSM: What sports did you play?

EWB: Football, basketball, baseball and track.

DSM: All four years?

EWB: I didn't do basketball my freshman year, but basically all four years.

DSM: What happened in your freshman year in high school? It sounds like you were an average student and you were told in seventh grade that you could do better. Suddenly in your freshman year in high school, you're being elected to student office. What happened?

EWB: It was my sophomore year, actually. In my freshman year, I just did sports and got pretty good grades. By that time I had started to do better in school. Again, I didn't have any plans for running for election. A bunch of the kids from North Hillsborough School said, "We think you should run for sophomore class president." That was the Spring of my freshman year. And I said, "Sure, I would be glad to if you want me to." They had run my campaign. We did posters and I had to give a campaign speech.

DSM: Was that your first speech?

EWB: That was my first big speech. I was amazed as anybody that I was elected. It was fun. I really enjoyed that.

DSM: The bug to be elected has not been...

EWB: Being elected has not been a goal! I think the goal is to make a difference. What I enjoyed about those experiences was the opportunity to help make a difference in the school and do things with the kids. We had very successful fundraisers; we had a lot of class projects; we did class parties. It was the matter of picking a goal, working on it and getting a team of people to go achieve a goal. To me that was very rewarding.

## What Customers Want

DSM: In the early part of your work at Hewlett Packard, you spent seven years in the microwave division. Were there bosses, mentors at Hewlett Packard during that time that made a difference?

EWB: There were a couple. One of the individuals I got to know very well right away when I joined was somebody named Doug Chance. Doug was a manufacturing engineer who had joined a couple years before. He was a Princeton engineering graduate and went to Stanford for a business degree. Joined Hewlett Packard. He was in our ski cabin together; we did a lot of things together with this group. Doug ultimately went on to become the marketing manager of the microwave division. Doug was always one of my mentors. When I moved to marketing, for example, I was very product focused because I had come out of the lab. Doug sent me to a sales seminar so I could learn how to think about customers and features and benefits and not just products.

DSM: You were the marketing engineer at that time.

EWB: Yes, but I didn't know anything about what marketing did and I didn't think about customers in that context. The reason I joined marketing, again, I really didn't know what it was until I joined HP. As I was sitting in the lab, these people from marketing kept coming over and telling us what kinds of products we should be building based on their knowledge of customers. I said, "That would be interesting to go out myself with my engineering background and talk to customers and try to figure out what kind of products we should be building that can solve customer problems." After three years or so, I did move to marketing. One of the stories I tell a lot is, I would go out and visit with customers and come back with all this knowledge of what customers wanted. I'd go back to my engineering friends and say, "Here's what customers want," and they would completely ignore my inputs. For about six of nine months I was very frustrated. Then I realized that that was my fault, not their fault. I hadn't really laid out the case clearly enough. I accepted ownership for the communication and said: "OK, I'm going to take all this data and present it in a way that they had to be convinced that this was the right answer. Once I started doing that, then people started seeking me out for more ideas and input. It was really an interesting lesson about taking ownership for communication yourself. When things are not working right, what can you do to make it better?"

DSM: Given the training of engineers and their single minded devotion to solving problems, why do you think more don't become involved in these direct relationships with customers?

EWB: Some do. But I think there are some that are really immersed more in the technologies and the innovations themselves and really trying to build better products. If you think about invention, there are many inventions—great inventions—that have been made from in what I call inside out, that were done with technological breakthroughs that ultimately ended up changing the world. Then there have been some inventions that have been made that are outside in—technological innovations that are in response to some emerging customer demand. I think you can have both. I think you need to have both. Some people tend to gravitate toward the customer side and some people tend to gravitate toward the technical breakthrough side.

DSM: It seems that some of that skill you acquired in your experience in high school. You overcame any fear of interacting with people and culture at Hewlett-Packard made those types of interactions.

EWB: The culture at HP was a perfect fit for me. It was a culture that truly valued people; that treated people with respect and dignity. It was a very empowering culture. The concept of management by objectives—you're dealing with a set of objectives in a broad framework, which you can operate. But how you did your job within that framework is very much up to you and your own innovations as to how you approach your job. I just found those philosophies—the philosophies of MBWA (management by wandering around)—very much aligned with my own personal philosophies of life, how I like to live my life and the way I like to interact with other people.

DSM: 1973-1976, you made that transition very well. You were a marketing manager. Was this your first step into not only doing the work, but managing people?

EWB: Yes. It was a first step. I started off as a product manager where I had three people reporting to me that were product marketing engineers. That was my first experience in management. But it was relatively small one, and I took a number of courses. HP had a lot of management development classes at that time that were very helpful. Then I became the product marketing manager. That was a very interesting time because HP at that point—when businesses time got to be a certain size, they split. Dave and Bill believed in the decentralized organization model. When our division got over \$1 million in revenue, they decided to split it. Some of the division moved to Sonoma County. I was on the team that helped pick Sonoma County. My wife and I went up there. Being a teacher, she was asked to evaluate the schools. We were asked to evaluate it as a place to live. We also looked at other communities, like Albuquerque and Medford, and others, but the team all thought that Sonoma County was great. We were all mentally prepared to move because we thought it was a great place. But then when the time came to pick the teams that would go or stay behind, they realized that I was one of the few people that knew anything about the products that were going to be left in Palo Alto. I ended up staying, even though emotionally we were excited about going.

It turned out to be very fruitful for me because the division that was left in Palo Alto—once the Sonoma County part was split out—was not making money and it was struggling quite a bit. The division manager at the time, a gentleman named Rod Carlson, put a task force together—a multi-function task force that he asked me to be on. We would figure out how could we get the business profitable again and successful again. That was first experience really working closely with manufacturing, working on a fairly business problem. In fact, I ended up heading that task force. It was a key point of turning that business around and making it successful again. I did that for about three years until I went down to the Santa Clara division as the marketing manager.

## The HP Philosophy

DSM: Very interesting mix teaching people how to do things by putting people in positions where they had to get things done, but also seems to be a real interest in training classes, bringing in people who are experts in the field. Can you talk a little bit about that mix at HP?

EWB: That's correct. There were several formal training programs, managing, at HP. There were programs for functional managers; then there was another program for division managers. Each time people would bring in some experienced HP managers—some of the executive staff would come in. I remember Dave Packard or Bill Hewlett coming in. I was just talking about their philosophies, particularly in the general managers one. I think that was an important part of education. And even though I never had a formal mentor that I would say somebody that I just really worked with closely, I tried to observe a lot of the other really great managers—people like Doug Chance and John Young and Dave and Bill and others. There were a number of very, very excellent managers that I think that I had the privilege to observe and work closely with.

There was also a lot of informal communication. One of the things that I think has really help shape the culture at HP is the stories. There are a lot of stories and folklore that go around the company. Bill Hewlett coming into the lab stockroom one night to get some parts and finding it locked and taking a bolt cutter and saying “We will never have locked storeroom. We trust our people. We want an environment of trust.” Those stories go a long way in shaping the culture.

Another story is when Dave Packard came back from the Defense Department. The company went through a difficult period of time. It was starting to run out of cash and was talking about going out for a \$100 million worth of debt. Dave went around personally to every one of the major divisions in the company at the time and gave a lecture that, those of us that were there will probably never forget. He talked about the importance of pricing for profitability—that some people were pricing their product on what was called “A Boston Consulting Group” model, where you price for market share and then make your profits later. He said, “That's baloney. We're going to make our profits as we go.” He gave us a lesson in asset management because he said if we had managed our inventories and receivables right, we wouldn't need to go out for debt. So he canceled our debt offering and said, “We've got six months or nine months to get our cash position back in line.”

We went after our inventories; we went after our saleables, and lo and behold, nine months to twelve months later, we had more than enough cash and didn't need to go out for debt.

DSM: Just by the process and combination of having the formal training and having an environment built well enough that you could interact, you got the equivalent of a MBA within three or four years.

EWB: I always say that I have an MBA from the school of hard knocks with listening to and observing some of the things that Dave and Bill did, and lessons like the lecture that Dave gave on profit and asset management, some of the formal programs inside the company. At the same time, the American Electronics Association had a program over at Stanford that was several weeks long. I went to that as a relatively new manager. All of those helped to sort some fundamental philosophies, and a little bit of knowledge about marketing and manufacturing and general management and leadership that all came out of those programs.

### A “Clean Sheet” in Spokane

DSM: Up until the age of about thirty-six or thirty-seven, you had the experience of being here amongst people you had know for years and years. You thought you were going to go to Sonoma, but you really did go to Spokane, Washington. Was that transition a shock?

EWB: It was a shock. After leaving the microwave division, or Stanford Park Division, then I spent four years at Santa Clara. They called one day and asked if I would be the general manager of Spokane. This was one of the product lines I had worked on in the labs, that I had been a product manager for in the microwave and Stanford Park Divisions. At that point in time we had two small children—a five-year-old, an eight-year-old, and a baby on the way—so my wife wasn't really excited about it. It was such a great opportunity, career-wise, that I told her give it two years. Let's just go up there and see what it's like and if you don't like it after two years, we'll come back.

We were up there in Spokane for five years. She did end up liking it and it worked out fine. I think in hindsight, it was a lot of the highlights of my career because I went up there as the twelfth employee. We were literally huddled in the corner of a leased facility. And over the course of the five years we were there, we had built a second lease facility; we built our permanent plant; and when I left in 1985, we had over 1,000 employees. It was like starting your own company with HP as your banker. I didn't need to worry about financing; I didn't need to worry about a sales channel; but everything else you could start from scratch. We literally started with a clean sheet of paper and said: “How do we want to organize this division? What do we want to do differently? What do we like about what we have seen in the past? What would we like to change about what we have seen in the past?” We used it as an opportunity to do a start-up.

In addition to the formal training programs, I feel fortunate that I've had a chance to have a lot of different experiences in my career. The Stanford Park Product marketing job was turning around the division and really getting the division going again after separating off the division that moved to Sonoma. The Santa Clara was also a turn-around situation—a division that had struggled and was trying to grow again. Spokane was, in effect, a start-up—starting a division from scratch and literally building it up was a terrific experience.

DSM: What were your top priorities when you did this Hewlett Packard start-up? Finding the right people?

EWB: The first priority was recruiting a staff. I needed to recruit a staff not to manage twelve people, but for managing what I felt was going to be a 500 to a 1,000 person division. Recruiting the right talent that would grow the division successfully was clearly a top priority. Another priority for me was continuing the HP Way. Turns out Spokane—I didn't know this until I got up there—was a very, very strong labor community. We were right across the street from Kaiser Aluminum Plant. There were a lot of unionized companies in the Spokane area. My nightmare was being the first Hewlett Packard division to become unionized. We did a lot those first couple years to train and educate new employees about the HP Way. Part of it was that we brought up about roughly 100 people from the Bay Area or other parts of HP. Then we recruited a lot of new people during those early years, making sure we brought in the right people who could keep the HP Way going, but also having formal training programs and communicating with employees what expectations were, what the HP Way really meant, how we expected them and the company to run in that environment. We spent a lot of time on that.

DSM: Were you in those days doing a lot of the interviewing yourself?

EWB: I did for my staff and then I did for many of the key jobs that reported to my staff. I would be involved in the selection process. I didn't get involved too much below that.

DSM: What do you look for during your interview?

EWB: A lot of things. I look for, first of all, a cultural match. I think it's important to find people that fit well within the HP environment—people you enjoy spending time with, that are team players, that have strong values, high integrity, honest and direct people. I look for those kinds of values. Again, taking in the HP culture, I also look for people that are self-starters. One of things I learned early on at HP even when I first joined the labs, is nobody tells you what to do every day. You have to figure it out. I observed that when we brought in people from other companies that were much more of a command and control style of environment, they really struggled at HP because they kept waiting for someone to give them instructions. I was looking for people who had examples in their background, in their career and in their personal life of taking initiative. Seeing something that needed to be done and just doing it. People that would not be afraid to speak up, to push back, to challenge the status quo, to innovate and try new ideas. It was all about experimentation, trying new things, and trying to create a vibrant environment of openness and innovation.

## Whence Cometh Innovation

DSM: There's a question I usually ask at the end of these interviews, but this is such a perfect lead in. Where do you think innovation comes from? Is it from great problems? Is it great environment? Is it great teaching?

EWB: I don't know if there is a real answer to that question because I think it comes from "all of the above." I think it starts with an innate curiosity. I think great innovators, they have a tremendous curiosity, but also great persistence to keep trying, keep trying, keep trying new things until eventually they get a break through. I think innovators tend to look at things from different directions. They're careful traveling on the path less traveled. They're willing to challenge the status quo and not accept at face value what's going on around them as something that's well understood. I think people that have the questioning mind, a mind that's willing to challenge and continue to ask questions about: how do things work; how can we make it better; is there a different way of doing this. It comes from their education; it comes from their background. But at the end of the day, it's probably in their genes. I think people are born with that innate sense of curiosity.

DSM: It seems that some people see problems as "problems", while there are other people see problems as a great joy.

EWB: I think innovators thrive on problems. They thrive on unsolvable problems. The bigger the problem, the more the ambiguity, the less clarity to the solution, the more the opportunity there is to make a difference. I think it's that dealing with that ambiguity. You have to have that curious mind, but you also have to follow it through to completion. I think there are a lot of people who are curious, but to get the breakthrough and the innovation, it takes a tremendous amount of persistence and dealing with the fact that every solution isn't going to work. You're going to have some failures, a lot of failures dealing with ambiguity. You may go six months; you may go a year. You may go years before you ever get to a solution to the problem you are solving. There's that continued push and movement forward. Peeling back the layers of the onion until you get to that level of understanding, that kernel of knowledge that all of a sudden seems so simple at the end. I think it takes a very questioning mind to get there.

DSM: This is the "which of your children do you love best" question. It's impossible to answer. But are there people that you are especially proud of having hired or found?

EWB: Actually, I'm proud of a lot of people that I have hired. There have been great innovators from a technical point of view and great business people. Also, people have contributed towards shaping the success of HP over the years and shaping the start-up and success of Agilent. Agilent is also a start-up, so building a company with it's own set of values, it's own culture built on the HP foundation is important. I'm very proud of a lot of the people. In many ways, that's probably one of the things I proudest of in my career, is providing the opportunity for really great people to do their thing.

## Staying Connected

DSM: As your career moved forward, did you feel an increasing sense of distance as you became farther and farther away from the line? Or is the HP environment such that helped to overcome that?

EWB: There is a little bit just because you don't have a chance to get out around as much. I think in many ways, the best job in the company is the division general manager job—the job I had in Spokane—because literally, you are the field general there. You're on the front lines. You're running the business. It's generally an autonomous business. You have a set of customers and competitors you can focus on, but you can also be out there everyday with the engineers, R&D, the marketers and the manufacturing folks. You're very much in the front line. I remember when I took my first job as a group manager in 1985 running the Electronic Instrument Group, that I miss that day-to-day interaction with people. I try and make it a point to travel and get out as much as I possibly could to have that opportunity to walk around the factories, give coffee talks to employees, to stay engaged in any way I could because that's how I gain a lot of knowledge and insight myself. I love the “one manager ahead” saying that management isn't all that hard, it's about listening to your customers; it's about listening to your employees and then going and doing what's right. If you don't have that grounding of what's happening in the marketplace from your customers, or what's happening in the company from your employees you can very easily get out of touch. So I've always set a very high objective for myself to get out as much as possible.

DSM: I was going to ask you about that because very early on in your career you had intimate contact with very senior people. The other way, then, is just as important—for senior people to have contact with the employees.

EWB: Exactly. I think the example of Bill Hewlett and Dave Packard being just down-to-earth people—people I was very comfortable talking to as a new engineer. That's certainly the environment that I have tried to create in the company. Like many of my early managers, when I first took on my first management job, I didn't know what management was all about. But he basically said, “Just be you and you'll be fine.” I think just that sense of being true to yourself and being down-to-earth—every job is important in the company and you value the contributions of everybody.

## Creating Agilent

DSM: Throughout your career, you have always been intimately linked to the parts of the business that have been the heart of the original Hewlett Packard. Describe if you will the background to the creation of Agilent in 1999 when you began feel that this was going to happen.

EWB: We went through a difficult time then, about the time of the Asian crisis in 1997. The company's growth rate started to level off. We had missed analyst's estimates for seven or eight quarters, so Wall Street was getting a little down on the company.

We spent a lot of time talking about what we could do to re-energize the company to get back on the quoted path and the path of consistent profit performance that we really wanted to have. At that point, HP had gotten very complex. We had a big computer business, a big printer business, a big PC business, a measurement business, component business; we had all these different businesses. We were trying to manage the company as an integrated whole. Then we realized we were spending too much energy trying to manage the whole, as opposed to than really giving the managers the responsibility for optimizing the parts. We started to do away with some of the things that had pulled HP together. We had management councils that would meet quarterly; we didn't do that anymore. We had management council committees that met, trying to share things across the company; we did away with those. We started pushing each manager for each business to say: "If you need to do something different for your business, go do it. If you need to have a different salary structure to go compete in the PC market, go do it; if you need different distribution channels to sell printers, go do it. Don't try to be held back by the fact that we're trying to manage this integrated company." We tried many things then, but frankly none of them seemed to really get the company back on track.

In the summer and fall of 1998, we started to explore other possibilities, one of which was to split the company up to get more intensity around each of the different businesses, by having the scrutiny of Wall Street and the scrutiny of the outside world—the spotlight of the outside world—on each business individually. We started to discuss this as one of the possibilities. Frankly, initially it wasn't getting a lot of traction, but as we were getting through the Fall of 1998 and the company hadn't started to improve in its performance, we started to get more serious about it. Initially, frankly, I was lukewarm to the idea, because I could still see the value of the leverage HP would get from all of the different businesses—the technologies from Agilent working to help the computer businesses at HP and all of this. But as we started working more and more through it and really modeling what these companies would look like, I got more and more excited about it. I think it was in the December time frame that we really decided—that was December 1998—that we would probably go in this direction. We were going to have one last meeting. I think it was somewhere in the third week in January, we had one last look at "is this what we really want to do" and "here's the alternatives."

DSM: Who was this?

EWB: This was basically Lou Platt's staff. We decided at that meeting—it was actually at our President's Club in Hawaii with all of top salespeople—that we would split the company. At one point, we looked at splitting it into three parts. Do we do it in three parts or two parts? We ultimately decided to do it into two parts. It was announced on March 1, 1999. It was kind of funny because after that meeting in Hawaii, Lou came to me and said: "You might want to start to hiring a branding company and you may want to think about putting a staff together. You want to run finance," and everything. I started doing that. I got a branding company; I started working on a naming company to help us come up with a name. I started to interview people for my HR, finance jobs.

Finally, I think it was somewhere around the middle of February—as I had done a lot of this stuff, but hadn't made any announcements yet—I went to Lou and said: “By the way, who do you want to run this new company? If I'm not going to run this, you probably ought to have somebody else make all of these decisions.” He said, “Oh no, we want you to run this. I just assumed that you would know that.” I said, “No, nobody ever asked me! But OK, if you want me to run it, I'll go run it.” I went ahead and made all these decisions and launched the company. But he never came back and officially said that we want you to be CEO.

DSM: In 1999, you start with \$8 billion.

EWB: An \$8 billion start-up. I approached from the viewpoint of being a start-up. I think clearly, we were a different start-up. We were an \$8 billion company that had global reach; we had a lot of scale. At the same time, we had the history and the foundation of HP to build on. But it was a clean sheet of paper. Like my Spokane experience, if you want to do something different, we could do it different. Nobody told us how we had to do things. It was up to us to decide how we wanted to do things. My attitude was: let's build on our heritage, let's take what we want to from our past and our history, but let's change it in ways that can make us even more successful in the future.

DSM: The genetic materials are the seeds of all the operating divisions of Agilent, I guess in embryonic form in test and measurement. Tell us how you decided to start with the sciences and chemical analysis.

EWB: Businesses that were part of the measurement part of HP at the time were the businesses that formed Agilent. It was about a year before the split, we'd combined the test and measurement businesses that I had run for seven or eight years, along with the chemical, medical and component businesses that someone else had run. So I had run those businesses for a little over a year when we had announced the split. As we started to look at our new company and our portfolio of businesses, one of things that concerned me about whether we could afford to invest as much as we really needed to in everyone of these businesses—again, this is the advantage of being a separate company and being more focused—we can say, what can we do to give our company the best chance of success.

One of the things we had been troubled by, was there were a lot of changes going on in the healthcare business. Big companies like General Electric and Seimens had been buying up a lot of medical electronic companies and creating a portfolio of essentially a turnkey hospital. They could go in and offer patient monitoring equipment, x-ray, cat scans, MRIs, ultrasound—all the things that we provided plus more—along with financing, servicing, support across this whole spectrum. About this time was when the health industry itself was consolidating. The suppliers were consolidating. We either had to consolidate ourselves—which means we had to spend several billion dollars to buy a number of other companies so we could compete across the spectrum with a GE or Seimens—or we would sell the business to someone who could. We decided that we would sell the business because, at least at that time even if we had been successful in buying up other companies, we still had a business that was going to go four or five percent per year and be difficult to make reasonable profits.

We decided we would focus our energies on the communications market, the life science market where we felt there were much more opportunities going ahead into the future.

DSM: Given the pressures of that particular time in the industry...

EWB: Yes, but it was really brought about by the fact that the medical device, the medical electronics industry itself was going through some very important structural changes. While we competed in patient monitoring and ultrasound imaging, we were just a vertical supplier, while GE and Seimens and others provided the whole thing and it became increasingly difficult to be successful.

## The IPO Roadshow

DSM: You had a rather extraordinary first year. Can you tell us about that?

EWB: The first year was very exciting. We did our IPO in November 1999. Leading up to that was just a tremendous amount of work. From March 1999 when we announced the split to November, we had to split 600 real estate sites, 16,000 shared infrastructure people, over 2,000 different IT systems that we had to clone and go and get ready to start operating as an independent entity. Many of those decisions had to be made very quickly. For example, to file for IPO in June, we had to have the shared infrastructure split and the facilities split. We had to restate our financials going back three years as if we were a separate company. We had to have all the levels of management selected all the way down through the organization in our corporate functions. All of this had to be done in the matter of three or four months. We had to file for IPO. We had to continue to do all the split of our IT systems. Then my CFO and I went out on the "IPO Roadshow", which was an experience itself. We did over a hundred meetings in twenty-two cities. We were out on the road for almost three weeks solid doing one-on-ones and group meetings with investors. It culminated with an IPO on the New York Stock Exchange. I think that was another highlight for me of my career, because all of a sudden everything came together. We traded on our stock that first day. The IPO had been successful. We invited a number of our employees from all over the world as ambassadors to share in that. Instead of having members of my staff up on the podium that first day when we rang the bell, I invited employee ambassadors from many of our sites around the world to be there, so they could go back and share the enthusiasm with the rest of the site. That was a very fun time. Then we continued on—that was an IPO for about seventeen percent of the company. The remainder of the shares were distributed to HP shareholders the following June. We were about eighty-three percent owned by HP for roughly the first six months after operating separately.

DSM: Did the closeness of the HP organization make this process harder or easier?

EWB: In some ways it was harder. It was clear once we had announced a separation in March. As we went through the summer and announced who would be going to be in which company, we were already starting to grow apart.

I think our people were anxious to get on with going separate and they were anxious for us to be separate. I think once you make that decision, the quicker you can get on with it, the better. Then in March 2000, when the market was just going crazy, we introduced our photonic switch. Our stock went up sixty points in one day. I think it was just an incredible time in the history of the electronics industry.

DSM: Talk a little bit about why the photonic switch was so important.

EWB: It went all the way back to the dot-com bubble in the late 1990s. When the Internet started taking off, everyone was trying to expand the capacity of their communications networks. There were tremendous investments to bring on new services and new technologies into the telecommunications market. At that point in time, it was really a race for bandwidth. We had this photonic switch, which was really a solution for the bandwidth bottleneck in the network. Back in those times, if you could even spell photonics, your price-earnings multiple was a factor of a hundred. When we announced this photonics switch, it got all kinds of rave reviews. We were the first ones out there to talk about having a switch that had the performance of a switch we talked about. It was interesting—we had just made the announcement that we were working on a switch at an optical fiber conference in March. That's what drove our stock up. The next day, I was speaking at an investment conference and somebody asked me when was the switch going to ship. I said not for a year. The next day, the stock went down about thirty or forty points. It's always amazing to me that so many people bought the stock based on not even knowing when the switch was even going to make a difference to our earnings.

At that point in time, we were still a very thinly floated stock. Only seventeen percent of our shares were actively being traded, the rest being owned by HP, so we were fairly volatile. We did our IPO at thirty. We were originally going to price the IPO in at about twenty or twenty-two. As we went through the IPO "roadshow", we got a better and better response, so we ended up pricing at thirty. The stock opened at forty-five. The first day it traded in the forties for a while; it sort of went up into the eighties, then to a hundred, and then, of course, to one hundred sixty when the new switch announced.

DSM: I had forgotten there was such a small proportion of it for trade.

EWB: Yes. It was very volatile.

## **Volatile Times**

DSM: Speaking of volatile, so much has happened since that March 2000: things that the industry has done to itself; things that were done to the country and the economy. What do you think happened that caused this massive collapse?

EWB: I think if you look at the whole dot-com bubble of the late 1990s, it was an interesting confluence of a lot of different events. We had the peace dividend in the late 1980s-early 1990s as the Berlin Wall came down.

We had lots of investment that used to be in defense move over into new markets like communications. The decade of the 1990s was a very prosperous decade in general from an economic point of view. And I think we had the development of some very extraordinary technologies in the 1990s. Think about the cell phone—in the beginning of the 1990s, it was a very small market and it exited the 1990s as a major business. The Internet, of course, was a huge boom to the PC market and the interconnectivity of people and even how people conduct business. So there were huge technological innovations.

Then there was, as well, there was a lot of available capital. As a result of the successful stock market steering most of the 1990s, there was a lot of available capital. I think there were a lot of people looking to invest in new ventures. People were willing to take the risk to go out and try to build companies that would take advantage of some of these new markets. The communications network needed to expand to keep up with what appeared like an insatiable demand for bandwidth. People were extrapolating very early on into the future and saying “We just need to keep expanding the bandwidth and putting more capacity online to keep up with the tremendous growth of the Internet and other new services.

I think what happened during that period—in hindsight—that there was some very suspect thinking about what was real value, people investing in things based on no real viable business model at all that never returned a value to the shareholders. There was far too much investment. At one point in Silicon Valley we had over 300 optical component companies. I think there are still sixty or seventy and the world only needs five or ten. Everybody wanted to be a service provider; everybody wanted to be a component or an equipment provider. It was literally a gold rush to capitalize on this. It was actually in many ways a sad time, because a lot of people who were part of Agilent got lured away by the promise of riches. I had people in my office with tears in their eyes not wanting to leave the company, but felt like they were missing out if they did not go and participate in this gold rush because they had friends or relatives or somebody they knew that made a ton of money on an IPO or some start-up.

I think that if there is any good coming out of the bubble bursting, we are back to reality. I think people are realizing that real value is what matters, that there is no law that defies gravity. We have to create businesses that make a profit. We have to create businesses that create value for your shareholders and your customers, and solve world problems. Now I think we’re back to the basics of business, which is also, I think, been good for the job market because employees are now looking at companies for what they are and how they can develop their careers, as opposed to going someplace just to get rich.

DSM: What do you see as the biggest obstacles to stand in the way of this technology really doing what it has the potential to do?

EWB: I’m an optimist. I think a lot of what we’re seeing right now is still the aftermath of the bubble. There is a lot of excess capacity out there. There are a lot of people out there that have been burned or wounded that are afraid to invest and take risks. But I think as times go on, there will be new technologies that come along that will drive us out of this. To me the secret weapon of every downturn in our industry has been new technologies.

Something will come along that will create some new demand that will be needing some new investment. I don't know if it's wireless data, whether it's broadband or broadband images on the Internet, it could be many different things. It could be life sciences and the whole genomics is the next revolution. But there are going to be new developments that technologically come along that I think are going to drive us into a new generation of devices and services and solutions for society that we can't even imagine today. So I'm an optimist when it comes to technology. I think there are still many, many great inventions ahead of us. I think to get to that point, we have to get through this difficult period and we have to have confidence in our future. We have to be willing to take risks; we have to be willing to invest; we have to trust our instincts in technology and the fact that we can continue to innovate as a society to come up with new solutions for the problems of today.

## **At the Dinner Table**

DSM: The question I ask everybody I interview during the last fifteen years, is the dinner party question. If you could put together a dinner with six or seven people—that you would think would be a pity if you didn't gather them around a table and capture their conversation—are there special people you'd like to see assembled to talk?

EWB: I like to read history and I like to read about individuals. Some of the people I admire—certainly Thomas Jefferson being one. Abraham Lincoln is someone who I have high regard for his foresight, his wisdom and his perseverance and the tough decisions he had to make for the good of the country. I'm a great fan of Winston Churchill. I think it would be very interesting to see what made somebody like Winston Churchill tick. In the past I've admired people like some of the great philosophers. In both high school and college I read a lot of Plato and Aristotle, some of these philosophers. I think it would be interesting to try and get their perspectives on it. Even people like Toque Ville, as a great thinker. On the human side and the art side, I just always have been fascinated by the creative power of people like Renoir—some of the great artists. Michelangelo has always been a favorite, a hero of mine forever. I've read a lot about his life.

## **Remembering 9/11**

DSM: We're in the midst of a war now at the end of a period that symbolically, if not in reality, began on September 11. Tell me where you were and were you personally or professionally touched by the incident?

EWB: I heard about September 11<sup>th</sup> when I was getting up in the morning. We had the radio on—the clock radio—and heard something on the news and I couldn't quite figure out what it was. I went in and turned on the TV and I turned it on just in time to see the second plane go into the World Trade Center and there was talk about a possible plane going into the Pentagon. Again, it was one of those moments like the Kennedy Assassination or Martin Luther King or others, where there was just kind of an emptiness, a feeling of “Why” and “What's going on in the world?” It was just such a somber and sobering feeling that we live in a world that would do such things to fellow human beings.

I remember watching it for a while and then I came in here because one of my first thoughts was were there Agilent people on those planes; were we impacted in any way? In fact, that morning I was supposed to speak at an investor conference—a Bank of America conference—in San Francisco. I came in here about 7:30. I remember standing in the lobby talking on the cell phone to our security people who were trying to track everybody down and make sure Agilent people were safe. We decided that morning that we should send out a letter from me reassuring our employees about the situation. Tell them to say calm—emphasize the importance of valuing diversity because we didn't want people to jump to conclusions about certain people. Then I headed off to the city with the idea that I had to give this speech, not knowing whether this conference was cancelled or not. It turns out that by the time I got to South San Francisco, they had decided to cancel the conference. I decided that all the investors were there and they were going to have a conference, I should at least show up. So I was going to go, but I was glad and relieved when they decided to cancel it. I spent most of the day just talking to our communications people, talking to other Agilent employees, calling around and just getting a sense for what the reaction is. One of the things that was very heartwarming to me, was I got probably between fifty and eighty emails from employees from other parts of the world that either I've known or didn't know at all, who just wanted to write me and to reassure me that they and their country were behind us during this time—that they realize that this is a tough time for Americans and they wanted to send their reassurance and support to their fellow American Agilent employees during that time. A lot of messages like that, I think, went a long way.

## Trusting the Future

DSM: When our program began—the first ceremonies were in 1989—the year the Wall came down, the Cold War is over, precisely the period that you described. You worked in the company and now you run a company that seems to work across national boundaries and here you were receiving calls from around the world. Are you in despair at this situation that we find ourselves in now or does that optimism come through?

EWB: I'm still an optimist. If you look at history and as a historian I'm sure you know better than I do, but if you look at history you go through periods of turmoil and trouble. But you come out of those and very often you come out much stronger and you go on to your next challenge. I certainly think that 9/11 was a defining moment in history for America just like the assassination of Kennedy or the falling of the Berlin Wall were defining moments for some period of time following those events. How this plays out, nobody knows. But I think it's a period where things you take for granted—your own personal security on your own soil—is something you can no longer take for granted. It's a big change. How we act as a society, I think is going to be very important.

But I think what we have to do is not over react. Again, we have to go back to those basics about trusting our human instincts, valuing people and valuing diversity and the multicultural aspects of the society we are. If there's anything I've observed certainly over the past twenty years, but going back even longer than that, is how the world is coming together.

It's such a global world. You look at events like the flu epidemic now in Asia and how quickly that spreads to the rest of the world. The fact that we watch in almost real time, the events going on in Iraq. There's a real time nature to our global world, which is very new and very unique. I think it's very important for us as a society for us to really reach out and understand our global role. The last thing that any country can do today is to pull in and be isolationist. I think we have to understand that events in the Middle East, events in Asia, events in Africa impact each and every one of us, in every country in the world, but certainly in the United States. Not becoming insular and not becoming isolated, but taking the time and energy to think about the things that happen in the world and having an impact, I think is going to be very important.

One of the most profound events, I think, in the next twenty or thirty years is the rise of China. China is going to be if not the largest, certainly the second largest economy in the world in the future. How we respond as Americans is going to be very important—and how the world responds. Do we isolate China or bring them into the world community? I think in this global age that we live in, we just have to take time to understand our neighbors and understand what's going on in the rest of the world because things are happening so fast. There are so many things you can't understand, you have to keep things in perspective and not over react to each and every event that comes along.

DSM: Before I ask you my last question, this is the hardest question, and often the most embarrassing question. For graduate students who look back on this time, how would you like to be remembered?

EWB: In terms of the company, I would like Agilent to be remembered as a company that made a difference—made a difference in the technologies we provided, the kinds of things that would enable our customers to do, and I would also like to have Agilent remembered as a company that served as a model of how a company should be. A great place to work for employees, a great citizen in the community and the places around the globe where we do business, a model for corporate governance for our shareholders—but I would like Agilent to be remembered as a company that others look to as doing it right whether it is in technology, or people practices or the way we deal with customers, or in corporate governance.

I see my role as a facilitator. I'm here to help all the great people at Agilent make it happen. I can set the bar, I can help lead the way, but I'm going to be there cheering with everybody else because I think it takes a team to make it happen.