

## Bill Terry Interview 10, March 25, 1996

KIRBY: The tape is running and it is Monday morning, March 25. This is Dave Kirby and I'm about to conduct my tenth interview with Bill Terry. Today's date is March 25, 1996 and we are in HP's offices, 1501 Page Mill Road, Palo Alto. At the end of our last interview, Bill, I believe we'd come up to the mid-1980s and you had started to talk about someone or some company in the Far East called Formosa Plastics.

TERRY: There was a mention in the 1985 annual report of a, I guess it was called a joint venture with somebody Nan Ya Plastics which is a division of Formosa Plastics and I remember that because a guy named Happy Holden- who was really a character who worked here in the printed circuit shop-went over and spent a couple of years in Taiwan with this thing. The story I remember very distinctly happened several years before this. It was probably in the early '80s and it was the occasion of an HP board tour of Asia. As far as I remember when I worked at HP, there was only one HP board tour of Asia. And it was the one where we had the famous board meeting in the presidential palace compound in Beijing, which was an interesting adventure. But the Formosa story was part of the board meeting or after in Beijing, the board split up with a number of HP insiders who were also on the board-myself, Dean and John-and went to different locations. This was a common kind of a deal because that was you could cover a lot of the territory. So Jim Hodgson and his wife, Maria, and myself and my wife went to Taiwan and we had, oh, a half-day of review of operations. Wen Ko was the company manager and then Wen Ko had arranged for us to go-well, he had several things on the agenda. That afternoon Jim Hodgson and I went to visit the president of Taiwan, President Lee, who was Chung Kai Chek's son; he was a man in his early '70s at that time and this was a big deal. Lots of security and soldiers and clicking of bayonets and we went in and sat in this room and kind of gave him a little report on what HP was doing in Taiwan. I was interested in seeing that everybody in the government-and this took place in Japan-that would talk to Jim Hodgson, would always call him "Ambassador Hodgson."

TERRY: Because he had been at one time the Ambassador to Japan. Anyway, that evening Wen Ko had set up a dinner with a really important customer, a guy named Chairman Wang-W-A-N-G. He was the Chairman of not only Formosa Plastics but lots and lots of other interconnected Chinese companies and he was a really big wheel! He owned the biggest hospital in town and that was one of the reasons he was a customer; we sold him a lot of medical equipment. So we got dolled up and we went into downtown Taipei and went to this big high-rise office building that was his headquarters and went up an elevator. This is the four of us plus Wen Ko into Chairman Wang's penthouse, penthouse suite, and we go in there and there's this very large dining room with a very large round table in the middle of it. And we kind of go around and we're introduced to the people and then we all sit down and we're sitting. This table must have been at least 20 feet in diameter. It had a large lazy Susanne in the middle of it and the first thing that happens is they start serving drinks. I don't recall if they asked what we wanted to drink; they simply brought out a whole bunch of bottles of cognac and set it all the table and everybody got a glass and everybody got about an inch-and-a-half of cognac and Chairman Wang toasted us and we toasted Chairman Wang. It didn't take us very long to figure out that Chairman Wang was either not drinking that cognac or he was drinking tea, because he was encouraging everybody else to slug it back-pretty typical of Asia. The people around the table were an interesting group. They were mostly men, middle-aged, Chinese. There were a couple of women and we were told that these were all members of Chairman Wang's family. But they all looked different and we found out later that Chairman Wang had two or three wives and he was accompanied at this dinner by Mistress No. 1, who was a very vivacious looking, outgoing, kind of like a Chinese opera star, a young woman who served Chairman Wang his food and kept his glass full and

made small talk in Chinese and English around the table. She was very well dressed and had some very large flashy diamond rings I remember, but I'm going to mention her later. Anyway, it was a really interesting dinner. I think one of the more interesting things, dinner... Not very much happened in a conversational sense because it was hard to talk across this huge table and not everybody spoke English but I remember they served a lavish Chinese banquet, kept bringing the food to this lazy Susanne and then the people would all insist that guests help themselves first and then they would help themselves.

KIRBY: Did the Chairman speak English?

TERRY: The Chairman did not speak English or he chose not to speak English. I imagine he could speak a little but he would speak through the mistress. She spoke English and I couldn't help but notice after we started eating that this lazy Susanne kept turning slowly and I couldn't figure out-I couldn't see anybody, you know, hitting it like that-and I looked around and sort of off in the corner behind the Chairman is a door, probably goes to the kitchen, and there's a servant standing over by this door with a pot, a potentiometer, a knob and they're adjusting the electrical speed of the lazy Susan as it goes around! It was a pretty classy deal! I used to ... My eye would be caught by articles in business magazines, both U.S. and Asian, through the subsequent years about Chairman Wang. I don't know if he is still alive. He's got to be in his mid-'80s now. He was... is and was ... a, you know, 97-pound small wizened, jogged every day, had all these mistresses and one of the recent business articles-in fact I made a copy and sent it to Jim Hodgson just to remind him of this evening- said that Chairman Wang had kind of officially decided that his family and his sons, many of whom were around that table, were not really the best ones to run his empire when he passed on and he was favoring his no. 1 mistress to be the chairman of the board! The Wang Enterprises because she seemed to have more business acumen than any one of the relatives. Anyway, that was an interesting evening and we left Taipei and went to Japan and we went to Haneda instead of Norita which is a little more convenient, because it was a short-haul flight and when we got to Haneda, I expected the usual hassle of getting through a Japanese airport. But I did not anticipate happened. We pulled up to the gate and an official got into the cabin and got on the microphone and said, "Will Ambassador Hodgson and Mr. and Mrs. Terry please approach the front of the airplane."

KIRBY: Wow!

TERRY: So we get up before anybody else and we get to the front door of the airplane and here are about five Japanese guys, all bowing and scraping, "Ambassador Hodgson, welcome back to Japan. It's so good to see you, and Mr. Terry, welcome to Japan. And please give us your passports and we will have everything taken care of. Just follow us to this small room where we will have a glass of tea and your luggage and everything will be delivered to the hotel."

KIRBY: Boy! It's nice to travel with the Ambassador.

TERRY: It was an arrival like I've never had or had since. It was fun traveling with Hodgson in Japan. The other story I started to tell you, I was reminded about in Japan. This would have taken place in the mid-'70s, maybe even early 70s, because John Brown was an American who was in Japan at the time. Dave Packard was a member of something called the Trilateral Commission, and I can't remember. You and I chatted off the microphone about the Trilateral Commission, who the three parties were; it was government and business, and the third one was either labor or academic, academia, or something.

KIRBY: Yes, I can't think of it either.

TERRY: And there was some guy, whose name escapes me- Tredia Rome goes through my head-who put this group together. There were about 200 people and their mission was to foster world peace through increased collaboration or trade or something like that. It was a

lofty goal, and they used to get some bad press because their meetings were closed to the press, so the press would think up bad stories...

KIRBY: Yes, yes, that's right.

TERRY: ... about conspiracies and stuff going on. Anyway, this occasion was a division review in Japan and Dave Packard was there and it was scheduled to coincide with the meeting of the Trilateral Commission so Dave could do two things while he was in Japan. So Dave went off to this I think it was an all-day or day-and-a-half meeting with the Trilateral Commission and then the next day and- a-half was the division review. We were staying at the Imperial Hotel downtown because Dave always used to like to stay at the Imperial Hotel. So this morning of the division review, we get picked up by Ken Sasaoka and John Brown, and Dave and I happened to end up all in the same car, and John Brown was driving; he could figure out how to drive in Japan because he'd been there a while, and so we're driving out to the factory. It takes about an hour to get out to the factory. We're driving along the freeway and John Brown, making conversation, says to Dave, "Well, how was the Trilateral Commission meeting?" And Dave says, "Well, it seemed to go all right" and blah, blah, blah, and he said, "One of the interesting things that we did was at lunch yesterday." And John Brown says, "Well, what did you do at lunch?" Dave says, "Well, we talked to the Emperor." And Ken Sasaoka visibly stiffened-[makes sound like sucking in his breath] SSSSSSSSSSSS-here's David Packard having lunch with the Emperor and this was still the time in Japan when the Emperor was a divine being.

KIRBY: Yes, yes, yes.

TERRY: Nobody else saw him or looked upon him.

KIRBY: Probably didn't partake of food!

TERRY: And it was Emperor Hari Ito at that time, so that's a memory of a historian in Japan. The famous Ken Sasaoka.

KIRBY: That's great. Excuse me just a minute to see how we're doing. All right. Before I get back to '85 and the notes, we were also talking about HP's history in what is currently called "positioning statements." These are these catchy little sort of phrases that get stuck on advertisements, TV spots...

TERRY: Oh, yes, yes. I haven't got a real good recollection, in fact, you've got to help me, Dave, remember one of them but the earliest recollection I can have was the statements in the catalog, the annual catalog, that would come out where there would be something in the front about Lord Kelvin. Lord Kelvin was a British scientist and there was a statement in there that "Knowledge gained without measurement is that of a meager sort." And there were more words to it than that; there were about three sentences but it tried to make the point that to really understand something, scientific obviously, you really had to measure it and... "If you cannot measure what [something], then your information is of a very meager sort."

TERRY: Yes, something like that. And that one ... about that time, the other one I remember and this is back in the '40s and '50s, was "Speed and Accuracy".

KIRBY: Speed and accuracy.

TERRY: Speed and accuracy was on advertisements mostly; it might have been on data sheets in the catalog and the "speed" part of it didn't really talk about, didn't intend that the measurement was made rapidly; what it intended was the products were easy to use. So when you could sit down quickly and make a measurement and get your results and go do whatever you wanted to do. You didn't have to spend a lot of time reading the manual or twiddling the knobs.

TERRY: And then "accuracy" speaks for itself.

TERRY: Then, I guess, it seemed to me there was a time that these things just went out of vogue. We didn't worry about making up new positioning statements. When the Vectra came out that had the touch screen on it, there was this idea that it was so easy to use, it would free you from the tedium of manuals

KIRBY: and special instructions and so the "Setting You Free"... "Setting You Free"....

TERRY: "Setting You Free" and that was ... included a TV ad with a butterfly...

KIRBY: With the butterfly!

TERRY: ... that was on the keyboard and the butterfly, I guess, would fly off and there was a coffee mug-I still have one at home-that has a butterfly on it that comes and goes when you have hot liquids in the cup and so "Setting You Free" was particularly related to the Vectra, and there was some movement to "Setting You Free" and try to adapt it to other parts of the company, which body rejected instantly! They didn't want anything to do with these butterflies!

KIRBY: That's right. I think I heard that it took them about a week to make that TV commercial because the butterfly wouldn't cooperate!

TERRY: Oh, it was a caterpillar I think turning into a butterfly.

KIRBY: Yes, something like that.

TERRY: And don't I remember you telling me we got letters from some biologist we got the wrong caterpillar; it couldn't possibly...

KIRBY: Mixed up with the wrong butterfly, that's right.

TERRY: ... which told us that at least somebody was reading the ads.

KIRBY: That reminds me, you know who passed away a couple of months ago was Bob Orr.

TERRY: Ah!

KIRBY: Bob Orr was at the LC Cole Agency and he was the account executive for HP on our advertising for years and years. He worked with Noel Eldred.

TERRY: Yes, I sure remember him.

KIRBY: Anyway....

TERRY: Another one that sticks in my head and this is pretty much in chronological order.

Somebody got a great idea about, again, these tag-lines or positioning statements about how HP really cares about their customers and we're going to stick with you and we're going to help you with after-the-sale service and training, whatever it takes. We just not going to drop the product on your doorstep and disappear. So that gave way to ... we had a series of computer ads when I was in computers that were quite successful and there was one of them was a really good one. It was a two-page spread and it had a picture of the old Palo Alto railroad station with a computer sitting out in front of it, and there was nobody else around and it said something about, "We're not going to abandon you when we sell you a computer." Anyway, the tag-line was "We're with you all the way."

KIRBY: Oh, I remember that!

TERRY: Remember that?

KIRBY: Yes, yes. "We're with you all the way."

TERRY: "We're with you all the way." And that one-I don't know who-but somebody decided that this was really important to get this message across internationally so the people in Europe were told, were ordered to use this and they took their best efforts to try to translate "We're with you all the way" and translating "We're with you all the way" just didn't work at all.

KIRBY: In the foreign language?

TERRY: In the foreign languages. In fact the one that I think it was in Italian that they came up with, after it got going in Italy, there were some accusations that it indicated homosexual tendencies!

KIRBY: Oh, really?!

TERRY: Yes, and you can see we're trying to translate "We're with you..." Translating it in Germany, just didn't work at all—

KIRBY: That's right, that's right. There's sort of a nuance, anyway.

TERRY: Right, exactly. What does that mean, "We're with you all the way"? So that didn't work very well. Then another one that came along—this is now probably 10 years ago—is "There's got to be a better way."

KIRBY: Oh, yes.

TERRY: And "There's got to be a better way" ... I remember being in instruments at that time. We didn't like that at all. We thought these things were kind of hokey and we had abandoned speed and accuracy a long time before, but "There's got to be a better way." That one hung around quite a while.

KIRBY: Gee, you've got a remarkable memory for these things!

TERRY: And then there's another one that I can't remember that happened in the last six or eight years that ... I do remember, one thing that I do remember that a lot of these—"There's got to be a better way" and others, in fact this whole idea of positioning statements was very much driven by the people in computers, and probably rightfully so because we had a whole new audience of customers to identify with. Regis McKenna was hired by Dick Alberding for a big lot of money to try to put together both a positioning statement and a two-sentence mission statement about what we were doing in computers. But the computer people would adopt one of these things. Bulletins would go out that the rest of company had to do it and I remember my friends in medical took great umbrage at these things because they were really concerned about attitudes of doctors and efficacy and not making too many promises and stuff like that. And then after the whole company would all get lined up, the computer people who'd started these things would say, "We don't like this anymore, so we're going to change" and so the rest of the company would have to kind of wheel around and kind of change but...

KIRBY: That's right, then they'd insert a new one.

TERRY: But I have noticed in the last ... in fact, when I was making these notes, I've noticed in recent HP ads, there are no positioning statements so, perhaps we're on the eve of a new positioning statement. Anyway, back to '85, the Canon relationship began in '75 and I can't remember what it said in the '85 annual report but it indicated something about our growing relationship with Canon; the laser jet was probably coming on at that time. The first laser jet printer...

KIRBY: Yes, that's the Canon Company?

TERRY: Right. The first laser jet printer was developed by HP labs and the drum that did the transferring of the image had a very special technology that we licensed from Canon and that's how we got to know Canon.

KIRBY: I see.

TERRY: And that product was never really very successful. It was a \$200,000 plus, twice as big as a refrigerator, high-speed laser printer. It was a reliability challenge and HP sold a couple hundred of them but it was getting our foot in the water with that HP labs project plus the relationship with Canon on the drum that really led to the super successful laser jet. '85, there are mentions in there about voluntary time off, unpaid time off, 10% pay cut for senior managers—that went on for about six months as I remember...

KIRBY: Oh yes, that's right. That's right.

TERRY: ... and it mirrored a program in 1970, so it was another one of those struggling with a lot of different kinds of problems but a few too many employees and trying to figure out how to keep the payroll expenses under control. '85 we started open-line surveys. I remember most of us thinking it was a good idea but being a little concerned that we were going to get it kind of over-organized and over-computerized and kind of getting a lot of flavor into it that it had to have a human element. You just couldn't send out surveys and have people fill out punch cards, stuff like that...

KIRBY: Yes, that's right, check boxes, yes...

TERRY: ... but it survives to today and I think it's been a really good help. 84,000 people on the payroll for open-line surveys. South Africa isn't mentioned again. Probably the heat was still on about staying or not staying in South Africa. Dick Anderson was elected a VP; Bill Terry was an executive vice president of computers and measurement systems. Platt was a senior vice president of manufacturing, medical and analytical and he worked for me, and Bill Craven was the vice president of components and Ben Holmes was the vice president of medical and he worked for Lou. Cyril Yansouni was in charge of PCs; Cyril was right in the middle of the "Setting you free" touch screen Vectra. Doug Chance was the head of information systems and Hackborn, head of the peripherals. And Paul had left at that time, In '85. In '86, business was improving. Precision architecture was talked about. We did have five months of both voluntary and involuntary time off and pay-cuts, hiring controls in effect; 1,500 people took voluntary separation and employment dropped by 2,000. That was mostly through attrition but some of it was voluntary, well, 1,500 was voluntary separation. So it was a tough time and this business of hiring controls really bothered us. We would rant and rave to division managers and everybody in sight about the situation and what they're natural attrition was and how they shouldn't hire anybody and then we would say, "Okay, send us your targets or your forecasts"-which were very heavily financially based but also include headcount-and we would get back these forecasts and it was as if we had been shouting into the wind. We would sit down and it happened with everybody who worked for me and everybody else, and we'd sit down and I'd say, "Look, Ben" or Dan or somebody, "you've got 5,500 employees and you've agreed with me that your natural attrition is about 6% per year and you're not going to hire anybody except 25 engineers from college-that's all we're going to hire-and so I expect your numbers to come back indicating that", right? And then the numbers would come back and in an exact example, they would go from 5,500 to 6,500! They'd have these huge numbers and we'd go back and beat on people and the group manager or the division manager would say, "Beats the hell out of me!" And they'd go investigate it and, of course, time would go on and we'd lose patience and wonder what the hell's going on and we'd send bulletins to the personnel departments that "You can't hire anybody-I don't care who-without the approval of a certain number of people". so we really had a lot of pieces of paper floating around with signatures and then we'd all sit in some room around here and we'd say, "God, this is a helluva way to run a business! This is really lousy. We shouldn't be doing this." And so we'd try our other technique of jawboning and cajoling and we'd wait for the numbers to come in and we'd go from 82,000 employees to 96,000! And we'd say, "Wait a minute!! Can't have this happen!" What actually was happening, I think, nobody really knows, was there wasn't any one big problem. There were just a whole cumulative number of problems. Getting the word down through the organization was tough and many people would kind of take it as "Well, he didn't really mean me in my department."

KIRBY: That's right. There was always "I'm the exception because of this very valid reason."

TERRY: 'I've got this new product program; I've got this new process; I've got these new ideas I want to sell, so I'm going to take my little department of 20 people and I'm going to say it's

going to grow to 23." No big deal: three people. Well, it happened in every department across the entire company! The support organization had these problems, I know, because the support organization would say, "Well, we're shipping all this stuff out there and we have to fix it all, and there's no reason why we can't grow our employment"... And we have to fill orders...so anyway, it was and still is, I imagine, a kind of a frustrating deal but it is fairly fundamental in terms of expenses. Let's see and this is in '86. The organization changed again and Doug Chance was in charge of business systems and Bill Parzybok was in charge of engineering systems and Lou Platt was in charge of manufacturing systems. And this was the time of the factory reorganization in response to the reorganization of the field sales force. That had occurred previously, where we now had a field sales force that sold both computers and instruments, and there was this reaction about, well, we ought to reorganize the factories to kind of get a line on a market basis as the field is aligned, selling to manufacturing or to engineering or to business and fortunately, the factory realignment really only took place at the top, that is it affected, you know, about three people: Platt, myself, Parzybok and others. And the divisions themselves found them ... could have found themselves with a new boss but within the division, there was no change. You were in Loveland or Colorado Springs or Cupertino -you were still in doing your thing.

KIRBY: They were just doing what they had been doing?

TERRY: Right and they found themselves hobbled up to a new boss and a few new relationships but fortunately we didn't get... we didn't screw up the basic part of the company because we could have made a big mess out of it. T&M stood alone. Most of T&M-that is the basic instrument part-was combined into this thing called engineering systems run by Parzybok or manufacturing systems run by Platt. The one part that wasn't combined was microwave so it stood alone and Dick Anderson was in charge the microwave part of measurement systems. I'll get to organization as we go along here but that didn't last very long. The common sales force in the field lasted about four years; the factory organization only lasted about a year and a half.

TERRY: And then we flipped it around-this would probably be in '88-back to where it once started and we had instruments and computers and medical and analytical and we dropped these engineering system, manufacturing system. I don't know if it was a good idea or not. It was kind of McKenzie's idea that I think ran a little bit amuck, that the basic idea in the field didn't work and the factory thing worked even less. The company was too product oriented and it was artificial trying to group divisions- Loveland made volt meters and data acquisition systems, so we kind of said, "Well, is that engineering or manufacturing? Well, it sounds like manufacturing." You know, we made kind of arbitrary decisions like that and they didn't fit very well.

TERRY: But fortunately we didn't do much damage to the basic parts of the company. Introduced a new portable Vectra touch screen. This was the year of the butterfly flitting around. Nine thousand Unix workstations using Motorola and RISC architecture. That was a big hassle; 9,000 Unix workstations grew up using the Motorola 6800 series processors and then when RISC was invented, developed here at HP labs, there was a real movement to make it a "unifying architecture" was a term used and people would say you've got to have a common architecture to either facilitate or to even have a chance of doing networking. If you don't have common, you've got all this disparate operating systems and processors and you're never going to be able to network. Well, yes, that sounded good but the world is that way. The world is unorganized and kind of disparate and not everybody in the whole world is going to use the same architecture. So the answer to that was "Well, yes, you're probably right but the networking would be a lot easier if you have a common architecture." So my friends in Loveland who were using Motorola processors and we had quite a good business going, and the people in Cupertino at HP labs were preaching RISC technology and they'd

make statements that it's disloyal to be developing anything on Motorola processors, that this Holy Grail called "RISC" was the thing to do and I got in the middle of this argument. John Doyle was on the RISC side, so was John Young; on the other side were people like Bill Kay, Freddie Winninger, and a number of others. Their attitude and my attitude was "Well, that's fine. We'd love to use RISC technology but we've got a really big important profitable business going here and we're not going to go from A to B without some assurance that it will work." And the RISC processor technology at the time had two basic problems. One of them was it wouldn't support what was called "floating point" architecture, which was used commonly in scientific applications but not in business applications. The other one was it didn't do very much for graphics because you didn't use graphics in business applications and you use graphics in these engineering applications. And so the people in Loveland, and Joel Birnbaum, kind of the father of this thing, said, "Yes, you're absolutely right because we design RISC processors, so what finally happened was I think time solved the problem. There was no right or wrong really in it. The people in Loveland said, "Look, we've got to keep shipping these Motorola processors but if you can make some changes in the instruction set and support our kind of application base, we'd be happy ... and it's 'cost effective' and it's got really good performance, we'd be happy to use risk processors." So what happened was HP labs got busy, made some changes, understood the application. They started developing some different processors-these are pieces of silicon now-and pretty soon Loveland got on the bandwagon or it was Ft. Collins, probably, about that time and they switched over. They stopped doing developing on Motorola processors and switched over to the risk processors, which are the basis of a whole product line today but it was a tough transition.

KIRBY: I can remember that. Hang on a minute.

TERRY: I know Fred Winninger left in frustration. And there were a number of other people, particularly in Loveland, that resented the people in Cupertino trying to jam this thing down their throat prematurely and it caused some hard feelings throughout the company. Let's see, '86 we introduced the Quiet Jet. This was the first of the ink jet printers. This was a really interesting technology. It was, again, developed initially at HP labs. I got involved in it because I was responsible for the San Diego division. They made plotters, graphics plotters, and they had an interest in this technology and then also, within the computer peripherals group, the Vancouver division had an interest in it and there was a lot of work done by at least two divisions plus HP labs that I was proud of because it really emphasized trying to fundamentally understand what was going on in this really complicated system called an ink jet cartridge or printer technology. People would accuse San Diego and me of dragging our feet and not jumping on the bandwagon real fast. You've got to help me with the name; there was a bright young scientist here at HP labs, Chuck ... He's come back to HP. Kind of slight, wiry haired. Oh gosh.

KIRBY: And he's come back?

TERRY: He's come back. Chuck Tyler is the guy's name. He ran the section that was doing the ink jet development and he was the one that would and the divisions-both San Diego and Vancouver-would look at everything at HP labs was doing and they would say, "Well, you know, that looks fine but we have to produce this thing in consistent high volume. And, you know, what about this variable or that variable." And of course, HP labs didn't have an answer to that because they hadn't really, nobody had yet really done a scientific investigation of inks and carcinogenic inks and all kinds of complicated things. Chuck Tyler would be very frustrated by that. He'd come see me and say, "Those guys are really dragging their feet. This is the greatest thing since sliced bread. And we're going to sell thousands and thousands of these things." And I'm not sure I believed him but I would try to calm him down and say, "Look, Chuck, I think it's a great idea, too, but we need to go



through the rigor of really understanding how this all works before we get committed to the marketplace and also committed with some very expensive process production equipment." Anyway, the story is well-known. We ... about the success of the ink jet. The first product that came out that used the ink jet was a relatively small printer to be used with a PC. It was medium speed and we thought the greatest thing about it was it was quiet. The competition were so-called needle printers that used mechanical technology and they were noisy; they made a kind of a high frequency clacking noise, like a sewing machine. They were made by companies ... Epson was the leader in Japan. And this ink jet printer was just about as fast, in fact it may have been a little faster, but it didn't make any noise at all.

TERRY: So we thought, "Man, that is really great!" Quiet Jet and it was called the Quiet Jet and we went roaring into the marketplace, all flags flying, "Listen! You can't hear this thing!" I think we must have run TV ads and you could hear the clacking one and the quiet one. Well, it took us about six months to figure out-live and learn-that the number one attribute of a printer is not whether or not it makes noise or not. The number one attribute of a printer is how good is the print look. And it turned out the print on our machine didn't look quite as good as the machine that made all the noise.

TERRY: And so we had to back up and got back to work on print quality, and that problem got solved as we learned more and more about ink splatter.

KIRBY: The customer was willing to put up with the noise if he got better quality.

TERRY: Number one attribute is how does this piece of paper look that I'm printing and I'm willing to put up with a certain amount of things in order to get a really good print. So it was a good lesson and the people working on it, it didn't take them long to really get this straight in their head and the improvement in the print quality came along and we sold millions of these things. There was a mention in '86 of the bar-code wand. This was a small specialized business within the components group. We never did do very well with it. It was narrow, it was not a big growth market and to make it a growth market, you had to get into a lot of customized, specialized applications, and that was probably better left to some smaller company. So it probably still exists today in HP's product line but no big deal. 1987 the annual report said it got better toward the end. This is probably the third year where we were wringing our hands about voluntary time off and so forth. So there was a little light at the end of the tunnel. It was a year of stock buyback. I think this was probably the first time we had done it. This was a controversial subject. We had a large build-up of cash. The growth rate had slackened off and things were going reasonably well so we had a lot of cash building up and I think John Young felt this was a good idea but Bob Wayman thought it was a very good idea and you could sit down with a calculator and you could mathematically produce results that would say, "Yes, you ought to take this cash and buy back stock on the market." Now, there had been some stock buyback programs going on, I believe, before this and they still go on today, where we're buying stock, we're using cash to buy stock to use to sell to employees in the stock purchase programs. So instead of issuing new stock, we would simply buy stock in the market and then replenish the coffers for the stock purchase program. But the proposal in 1987 that came out was far beyond that. The record would show the numbers but it was like \$500 million where the employee thing was consuming \$20 or \$30 million a year, my memory says. So this was a pretty big deal and Wayman kept standing up at the blackboard proving to all of us why this was a wise thing to do. And he made a bit of a tactical error. He or John Young made a bit of a tactical error and they didn't get Dave Packard quite lined up the way he should be lined up so there was at least one or more board meetings where Dave took a really dim view of this whole thing and he tarnished Bob Wayman's reputation at least in his own mind at least a little bit because he was just fundamentally opposed and he used words like "gimmickry" and stuff like that.

KIRBY: "Shenanigans".

TERRY: "Shenanigans", "financial shenanigans" ... you got it.

KIRBY: That's the one that Wayman really rebelled at!

TERRY: Anyway, he finally succumbed. I don't know, I don't think he was ever convinced it was the right thing to do but he finally succumbed and we did it at least once or maybe twice and maybe it'll be on the horizon again. It didn't go down easily.

TERRY: We equipped the United States sales force in '87 with portables. Dick Alberding was in charge of this combined sales force. It sounded like a good idea, where you could have your ... each salesperson would have a portable computer and they could plug it into a phone line and they could get data on the status of customer orders, they could get technical information, they could deliver a quote right on-line. Walk into a customer's office with your little portable and your little Quiet Jet and you could produce a quote and boy, on paper and in talking about it, man, it sounded great! And so, they equipped the sales force, at least a thousand of them, with these portable computers which is a pretty big chunk of change and then they found out that this talk about databases, particularly, is a lot of kind of fluff and when you really get down to it, trying to do this is very, very difficult. First of all the things were very hard to use. They were not friendly. You had to be a real computer jock in order to get through all this stuff...

KIRBY: And to understand it.

TERRY: ... and the other thing they found out was this thing called databases, you know, creating these databases, it's real easy to draw a slide-it looks like a barrel-this is the database. Well, creating this database of something (customer orders, technical information) is a giant problem, having tools to get in and out of this database is big deal, and keeping the database fresh, you know, every hour or every day, that's a big deal also. And so what started out to look like kind of a giant nationwide airline reservation system...

KIRBY: Yes, with all these machines, right?

TERRY: Right, turned out to be a fairly large flop. It turned out I used to go make calls with salesmen. Every once in a while, I remember there was a guy in Texas I went out with one time, who had one of these things and this guy was a real computer jock and he could do some really interesting things on this PC and he loved it but, boy, he was the exception. Most of the rest of the sales force said, "Screw this! I'm going to carry my papers around with me in the back of my car." Even today, I've seen ... I've never seen the application close up but there are companies who are selling applications software to run on PCs for sales forces but I suspect we're still not at the point of really good databases and really easy tools, where you're automating your sales forces is really that practical. Let's see. Relocation incentives were announced in '87. So even though the year was getting better toward the end, this was some more of this voluntary move people around within the company. A lot of it was from the Bay Area to Boise, where there was growth in the printers and then some of it was to Ft. Collins, where there was growth in workstations. It was out of the Bay Area and so we cooked up some formulas that would help people with some of the expense of relocation. Fortunately, their houses had appreciated here and they could buy cheaper in Boise, so we didn't have to get into the mortgage business. Incidentally, we did get into the assisted mortgage business. I don't remember when, Dave, in the '80s with some key managers. We moved some key managers into Palo Alto and we helped them with company-financed mortgages, which they had to pay back. I'll bet we did it for 15 people approximately and after doing it for about two or three years, we gave up. It was too hard to administer. There were too many sweetheart deals being made. It was all public information.

KIRBY: Inconsistency.

TERRY: Exactly and it would appear in the prospectus and that would be an embarrassment to

Joe Blow who got a better deal than Joe Somebody Else. So the whole thing just sort of caved in. Fortunately the interest rates probably declined also and we didn't need this kind of complicated tool anymore, but we did offer voluntary ... we offered relocation incentives, modest relocation incentives, to all employees if they were willing to move to a location where we needed them. This was the year we also started temps. That is, it was all right to hire either directly or through contract services employees for short-term needs. That was a system that worked reasonably well, although it was commonly abused. If you couldn't get a requisition signed for an employee, you went out and hired a temp and even though you were only supposed to keep them six months, you'd just keep renewing them.

KIRBY: Renewing the contract?

KIRBY: That was a way to get around the hiring freeze.

TERRY: Right, and the scientific instrument division over here I found out-I must have been with analytical then-had a receptionist and having a receptionist in your lobby is not a temporary job. You have to have one if you're going to have a lobby. Anyway, they had a receptionist over there who was a temporary and had been working two-and-a-half years there in the lobby. So it was a good tool and I'm not sure the abuse was, you know, damaging but it was annoying when people would use this system this way. It was intended particularly for short-term production requirements in manufacturing, where you had a big deal or a new product or a big order, particularly in places like peripherals, where you had to produce a lot of machines-personal computers for dealer inventories-so you'd have a very big three-month production cycle and then it would flatten or drop off into your long-term demand. But I think it's still with us today. William R. Hewlett retired from the board in '87. It was hard to tell he retired. He kept coming to the same meetings. But he officially retired. He sat in the same seat, said the same things and I don't remember at the board meetings. We didn't vote very often. I think we voted for the approval of the minutes. We only voted for things that you had to vote for, and I think Bill didn't vote but that was the only change. Didn't the board have to vote each year to keep Packard on?

TERRY: Yes. Dave ... each year...

KIRBY: Because he exceeded the age...

TERRY: Yes, he exceeded the age limit not of, I guess, the board or something, but there was an approval each year of David Packard's continuing as an employee, because he was an employee.

TERRY: I don't know what age. It must have been age 75 or something or other, but anyway, that would come up each time, and Dave would always make some kind of cute remark about, "Well, if anybody opposes this, they can leave the room!" Or something like that.

TERRY: But we all do it and chuckle a bit. Jim Hodgson and Tony Mapers retired. Hodgson, I mentioned before, came to HP from Lockheed. His background was human resources and he was very useful in personnel policy development. Tony Mapers came from Merck, a big deal, pharmaceutical chemical company.

KIRBY: Yes, he was a Dutchman, wasn't he?

TERRY: He was a Dutchman, had a very heavy accent. I'm not sure he was as effective as other board members with his background and his specialty. Walter Hewlett and David Woodly Packard joined the board. This was the first influx of family members. Both of them brought to the board some experience with computers, personal computers, but not much business experience at all. But they were willing to learn and they asked a lot of good questions. Walter particularly wanted to get out and visit the divisions and understand what they were doing, and there was a little concern. I know John Young had a little concern about them getting overly meddling in the operation of the company because they just didn't have any

business experience, but that turned out not to be a problem. And they were trying to learn something so they could contribute to the HP board. Don Peterson joined that year and that was a very good addition to the board.

KIRBY: From Ford?

TERRY: He was a really good business leader, an engineer from Ford, father of the Taurus. And Don would always ... Don once in a while would make some pithy comment at the board meeting that really indicated something about his wisdom and business acumen. Introduced new software for the electronic design system. We're still in the applications software business in '87 for electronic design. We're learning the hard way about how complicated this is. A little bit like my story with automating the sales forces. Easy to wave your arms and draw these diagrams and to get this stuff and really do it is a lot more difficult. Introduced the VXI bus. This was an instrumentation bus that was different from the HPIB, Hewlett Packard Interface Bus. It was designed to connect cards, not whole instruments, in a card cage and it came from a bus called VME, which stood for Versa Module Europa, which was a bus or an interconnect system that had been used in Europe for a number of years and then it was adapted for instrumentation and that's what the "I" was, VXI and it was developed in Loveland. It was ... we had to develop a whole series of these instruments on cards to fit into this card cage, so it took a while to get that done but as far as I know today, it's been a very successful program. Introduced bright light-emitting diodes. This was a contribution of the components group in materials technology. They had understood with some help from HP labs a long time ago that if you were going to make really good light-emitting diodes, you had to be in control of the materials, and so they were really experts at growing and mixing up this witches' brew of stuff that would glow bright red or bright green or bright yellow and it has been a continuing contribution in that business. Make light-emitting diodes in Penang. This would be 10 years ago, 15 years ago, and we were making about 1.2 million lamps per shift every 8 hours.

KIRBY: Wow!

TERRY: And I don't know what that number is today, but it's probably 5 million per 8 hours.

KIRBY: Wow!!

TERRY: So this is a really big deal. And you really worry about these things because you're selling them for seven cents each when it costs 4.5 cents each. New laserjets, new scanners coming out. Scanners are kind of a result of producing the laser printers. Scanners had been around a while but learning something about the technology of printing and some of the things doing with lasers, HP developed a very successful line of scanners. 1988, the annual report talks about the 50th Anniversary. It was also a good business year, \$10 billion, 22 percent growth in volume and 27 percent growth in profit, margins at 8.3. So things are looking a lot better after some years of tough times in hiring controls. It was a year of memory shortages, DRAMs, dynamic RAMs. It was nothing nefarious going on. It's just that the whole demand for solid state memory was really taking off. PCs were successful and computers and workstations in general and it takes a while for suppliers, mainly Japanese, to really come on-line with these multi-million fabrication facilities. These shortages develop some interesting alliances. This was when the Koreans really decided they were going to get feet first into the DRAM business and they threw money and energy at this like nothing you'd ever believe. I was in Samsung, Korea, sometime before this when they were just getting started and I visited their DRAM plant and this was ... they were building it. Well, one of them had been built, they were building a twin of it across the street and it was 24-hours a day. They worked seven days a week, they were constructing this thing.

TERRY: And, you know, they were just going at it like it a war. Samsung became one of HP's best suppliers and they really have been giving the Japanese a hard time in this business. I

remember touring this plant and looking at all this really expensive exotic machinery and I talked to the plant manager who spoke reasonable English and I said ... he told me he was a long-term Samsung employee, like a lot of these managers would be, and I said, "What did you do before you ran this DRAM factory?" He said, "I ran a fertilizer factory" and he said, "This is a lot harder!" When these shortages broke out, a number of us got involved in trying to cajole or do anything we could with our main suppliers in Japan to get our fair share of their output. Everybody was on allocations and of course, they were all being beat on by everybody to give them certain supplies and many of us went over there and sat down with the senior managers of NEC and Sharp and a lot of other places and just tried to convince them that we were a good long term deal and they ought to give us more than we ask for or as much as we ask for. And they were polite and they were trying to balance all these things against one or another but we put a lot of energy. John Young put a lot of energy also into trying to get these DRAM suppliers to cooperate because it was right in the middle of our shipping path. Costs of goods were up. This was probably not the beginning but a trend that has gone on for quite a while, is a mix of HP's businesses shift. That the costs of goods in the peripherals, stuff going through the consumer channel, in personal computers, is higher than what it might have been in instruments years ago. Costs of goods in instruments of 40, 45 percent therefore your gross margin is 55, 60 percent. Costs of goods in some of these other things would run 60, 70 percent and some financial analysts outside the company would look upon that as being just terrible. Of course, it wasn't terrible. You were growing a different kind of business and if you could control your expenses, you could make a really good profit at a 60 percent cost to sales, particularly when it was growing at 40 percent per year and it was a multi-billion dollar business, but it takes a while for people to understand that and the people who were working in these organizations, some of which came from instruments, had to learn that their old habits just wouldn't work. You couldn't spend 10 percent on R&D and 5 percent on marketing and 15 percent on selling. It wouldn't all fit when you had a 60 percent cost of goods. After two years of zero growth in employees, we added 5,000 employees in '88 so hiring controls are off and the dam is open, people are spilling in. MPEXL, another variation on the operating system for the Spectrum 3000 computers is delayed. It sounds like old news. New logic analyzers, new datacom instruments and we ship the one millionth laser jet.

KIRBY: Fantastic!

TERRY: '89, good year in growth at least: 21 percent growth in volume, operating profit up 12 (not so hot), net profit up 2 (ugh)-too many marketing expenses. Hiring controls are back in effect!

TERRY: After adding 5,000 in '89, we're back to the hiring controls. This was the year we acquired Apollo and we had been getting, prior to acquiring Apollo, we had been getting very skeptical about applications software development versus using applications software from third parties. It's such a big world out there and when you start to trying understand, it's a problem and when you try to do it yourself, you tend to alienate everybody else who's also trying to do it. So if you're doing it yourself and you go around to third parties and say, "Gee, we want to resell your software." They say, "Hell, you're competing with us. We don't want to have anything to do with you!" and blah, blah, blah. Apollo ... anyway, we're developing this electronic design software and we're not doing too well. We're understanding really how complicated it is and trying to do it all under on our own, and then when we acquired Apollo, they weren't doing this at all. They were doing no software development and they had some big customers, Mentor Graphics being one of them, who was in the electronic design business and when we acquired Apollo, Mentor Graphics told us-and their were using Apollo computers-they said, "We don't like it buying workstations from somebody who is also competing with us for electronic design software." So that was kind of the final nail in the

coffin and Lou was involved, John Young was involved. I believe I was probably out of it at that time. We really decided we weren't going to do any more applications software development, so we got out of the electronic design stuff. We had to go repair some sites where we had some stuff installed and fortunately, we had a good relation going with Mentor so we could get our stuff off and obsolete it and get the Mentor stuff in there.

KIRBY: I see.

TERRY: It cost us some time and some money and some energy but it turned out all right. And we did stay in some specialized areas of microwave design and we still are today. We bought a company called EE Soft and we do microwave design CAE, application software, and it was a very successful and I think still successful mechanical engineering program in German. A guy named Tilman Schod started it and it was mechanical design applications software but it survived. It's kind of a nichey sort of a product, but except for those two, everything else went into the cultivating of third parties, getting third parties to run their software on our hardware and doing everything we could do help them resell it. '89 was the year of the \$9 million earthquake. I don't know, where were you? Were you working then?

KIRBY: Yes, I was home. Our daughter was home, too. I'm trying to remember. It had quite an effect on Hewlett Packard.

TERRY: It did. I was in the Mayfield Mall site. It had been purchased and overhauled and built for computer support or for support in general, not just computers. And I was sitting in a conference room down there with a group of about 30 or 40 people about 5 o'clock in the evening and this thing started going. And it was ... I wasn't really frightened because I'd been through a lot of earthquakes, being a native of California, but it didn't take me long and everybody else in there to get under the tables.

KIRBY: That's right, these big tables, yes, yes.

TERRY: And some of the ceiling started coming off. I remember Jim Arthur, who was the head of support, who is really an interesting guy, a very nice person but he has-like all of us-he's got some fears and he doesn't like to fly in airplanes and he doesn't like earthquakes and he was absolutely white as a sheet. I thought he was going to pass out! When this thing went rumpling through there for about it seemed like 30 seconds, and then we all went about our business. And it must have been ... I don't think it was a Friday. It was weekday because then the next day, there was enough apparent damage that we got the word out on the radio and other ways, a lot of power was off, that HP's facilities would be closed except for people who could, you know, do some of the clean-up. John and his staff so-called "met" somewhere around here, I guess it was down in building 20, and we all, you know, kind of gave each other assignments and then we all went around to different facilities. I went down to Santa Clara and some of the instrument facilities and we met later in the afternoon and kind of delivered a "where do we stand" and it was not too serious. There were a couple of problems. There was a large water tank that stored hot water in the Santa Clara facility. None of us knew it was there; it was up on top of the cafeteria, and this damn tank had moved off its supports and was leaking and so there was a kind of a messy problem and there was a lot of glass out of the Santa Clara facility. But most of it was cosmetic crap just thrown around and... There was a building here on Page Mill where the TV studio was housed and that really suffered some real damage.

KIRBY: Right, this was the one over here on the corner.

TERRY: Right and I remember there was one guy working on the studio said he was never going to back into that building and if necessary, he would leave the company.

KIRBY: Yes, I do remember that. That was a leased facility and that's on the southeastern corner of Page Mill Road.

TERRY: We were talking about the earthquake and the building on Page Mill and Foothill

Expressway that we leased was badly damaged, as you reminded me. That building was built probably in about 1960 and the first occupant of that building was Shockley Semiconductor. William Shockley.

KIRBY: Really?

TERRY: Nobel laureate. Co-inventor of the transistor and a man with odd views about genetics and black people and intelligence.

KIRBY: Yes, that's right.

TERRY: He started his first business there and that was really one of the first semiconductor businesses in the Silicon Valley. It was later sold to Clevite. It became Clevite Semiconductor. And then through the years, it had a number of occupants and was finally taken over by a developer and refurbished but it's not surprising it didn't hold up very well.

KIRBY: '89 was also the year where we had a little celebration of HP's 50th year.

TERRY: Right.

KIRBY: Here. We had down in Palo Alto, by the garage.

TERRY: Oh, yes. I don't remember if I was there.

KIRBY: We had sort of an ice cream social in the afternoon.

TERRY: That's right, yes, I was there. I remember.

KIRBY: It was fun.

TERRY: I remember being there.

KIRBY: Bill and Dave went into the garage and I was with them, and they had not been in that garage since they had left it. It was amazing!

TERRY: As I recall, you were reporting to me that they made some semi-negative comments about that bloody place, something about they ought to tear down that garage.

KIRBY: That's right, that's right. It was funny. Bill said, "Well, let's see, Dave, your workbench was over here and mine was here." And Packard said, "No, it was the other way around." And you know, it was great, it was great, it was funny.

TERRY: Let's see, I remember being at the ... I wasn't in the garage with you but I was out. They had a ceremony. I think they both said something.

KIRBY: Yes, they made speeches.

TERRY: John said something and it was the governor there...

KIRBY: And the mayor. There was a representative from the State government.

TERRY: Right. It was a nice occasion.

KIRBY: And then we had each HP entity around the world send an employee.

TERRY: I remember that.

KIRBY: And that was a good idea.

TERRY: I remember giving them a talk and in fact that whole thing, that anniversary year, was very well-organized and came off real well. There was some concern in the beginning that we not spend a lot of time on nostalgia.

KIRBY: That's right.

TERRY: I don't know if it was you or someone in the PR department that cooked up this "50 Years of Looking Toward the Future"?

KIRBY: That's right.

TERRY: I thought that was very effective and it got everybody focused on, you know, just a little

bit of nostalgia but look at all these wonderful things we can do in the future. But it was....

KIRBY: Yes, it was fun. It was fun.

TERRY: It was very well organized and in fact, I had at least one or two occasions of other companies who would run into anniversaries and I would give them the name of Mary-I can't remember her name.

KIRBY: Oh, Marianne Easley.

TERRY: Marianne Easley. I would give them Marianne Easley's name and say, "If you want to learn something about how to pull one of these deals off right, go talk to Marianne Easley."

KIRBY: Yes, I kind of put her full-time on this stuff that year.

TERRY: Yes, that was a good deal. Anyway, so much for the earthquake. Well, in another earthquake, we re-aligned the computer business once again! We created the computer business organization. Put Dean in charge and appointed a computer business executive committee and I could see John and Dean struggling with the same problems I had when I was involved with computers and, you know, it's a complex subject but it's "How do you run a systems business?" and "How do you make decisions?" And there were some controversies going on about RISC versus Motorola and what about the internal processors and what about Unix versus MPE and all these kinds of issues, and how do you organize the sales force, and so forth and so on. And they were struggling with trying to figure out how to do these things and, you know, some of the previous techniques, you know, there's probably no good way to do these things but when Paul was in charge, he did bring an advantage to this because Paul was very self-assured and noisy, and you knew where you stood and whether he was right or wrong, he was a bit of a dictator and, you know, one view was you needed a dictator to run the computer business!

KIRBY: Yes, yes.

TERRY: You couldn't have a lot of shilly-shallying around and debating because these technocrats would take forever! They'd just wear you down.

KIRBY: That's right, that's right. He'd make a decision and that was it.

TERRY: That was it!

KIRBY: Yes, whether right or wrong.

TERRY: And some of these technocrats .... the New Machine was a book written by a guy named Tracy Kidder on the development of the Data General computer that really kind of put the finger on it. I may have mentioned this before. There's something about inventing computers that just gets certain people ... it's a religious experience! They get really strong feelings about these things.

TERRY: It just trying to get them rational, get them to agree with somebody else's point is damn near impossible. Anyway, that got done. It didn't last too long. That might have lasted about two years and John and Dean got into a little trouble with it because it was viewed by the proletariat as being over-bureaucracy and too much rule-making and you had to come in and you petitioned this executive committee for a decision on some really technical fine point and that later on got to be an issue, particularly in computers, with a lot of people that finally Dave got involved because people were complaining that "the executive committee is making too many decisions" and so forth. However, several other executive committees ... there was an executive committee of HP labs-that term was used-there was an executive committee of the board, that was the three inside directors that were permitted to do almost anything except sell the company and raise the dividend. There was an executive committee that John's staff and there was an executive committee.

TERRY: And there was an executive committee in Medical. It was just a term that had been



overused in his staff and so the word "executive committee" got to be sort of a bad deal, at least in Dave Packard's mind, although I really think the origins of it was this computer business executive committee and these other executive committees, they probably had their problems, too, but the John Young Staff Executive Committee I think had a bit of a problem in really kind of controlling the agenda and making decisions on what it is they were going to get involved in and what they weren't going to get involved in because without some discipline on the agenda, this kind of got to be the king's court and all the petitioners would line up with every piece minutia you could think of.

TERRY: And the agenda would get used up on totally inappropriate things and some weak people, frankly, would come out of those meetings and they'd go throughout the company and say, "The executive committee has decided..."

TERRY: So anybody whose got any common sense, I think, knows that committees don't decide anything. Individuals decide things. Committees debate, exchange information, argue but in the final analysis, some individual has got to make a decision. But later on, I think it's in my notes here, Dave Packard got on the subject of executive committees and bureaucracy and decision-making.

TERRY: Although, again, as I said, I saw Dean and John struggling with the same problems I struggled with, probably still struggle today. Lou and , and others on how do you manage a computer systems business?

KIRBY: The corporate executive committee, I think, it was my observation that there wasn't much closure and I guess this could be put at the feet of John Young. You'd go in there and there'd be a discussion and then John would say, "All right, let's move to the next item on the agenda" and people would leave the room and they'd say, "I wonder if I got a green light or a red light or what the hell I got?" You know? It was funny. I'd see that in action, too. It was a little disturbing because I think, you know, this is a personal feeling, every meeting needs a leader and they need to say, "Here's the purpose of the meeting."

TERRY: And "Thank you for the information; we're not ready to make a decision" or "Don't bring us any ... we're not making the decisions: you're making the decisions!" or "I like your decision" or "I don't like your decision".

TERRY: It did suffer a little bit from that and this control of the agenda was, in my view...

KIRBY: Oh, I can remember Jack Brigham, I guess...

TERRY: Poor Jack was kind of the secretary and he was not in a position to do anything other than sort of do these alphabetically or some others as they came in, and so, you know, we'd run out of time. We'd talk about important issues and hear a bunch of junk but let's see, what else did we do? We introduced some medical patient monitors in 1989. I got very in... I was responsible for medical and that was a really difficult cesarean kind of an operation. We'd had a line of medical patient monitors. I forget the code name of the new one.

KIRBY: Merlin.

TERRY: Merlin? Okay. The Merlin Monitors. So we had an existing product line that was getting long in tooth. We got a new product line under way. This new product line was co-developed between Waltham and Boeblingen and that was a really big problem!

KIRBY: Oh, boy!

TERRY: Because it was a systems product and it had a lot of software in it, so you had this coordination between two locations on all this complicated software and it got out onto the market and it didn't work very well at all.

KIRBY: Okay.

TERRY: There were a lot of bugs in it and missing modules and so forth, and I got really concerned and I went back and I ... Ben Holmes still reminds me of the words I used. I don't quite remember the words I used but I threatened to fire him. I gave him six months to get this fixed right or I was going to take him out of the job. It was really bad. It was a really big problem in an area where you couldn't afford to have problems with a patient monitor.

TERRY: But Ben made some changes and got the thing fixed and on the market and it finally became a super successful product but, man, it came out real tough!

KIRBY: Was Carl Grunde in charge of the Boeblingen thing still?

TERRY: I don't think so. He had moved on.

KIRBY: He was a real character.

TERRY: He had been involved in some of the early medical products. The fetal monitors, but no, he had moved on. I can't remember the people that were in charged but we learned a lot about trying to do co-development over too long distances.

KIRBY: Yes, it's difficult.

TERRY: '89 we were listed on European stock exchanges.

KIRBY: Oh, that's right.

TERRY: That was a push mostly, I believe, by the sales forces and the country managers who craved the prestige and the exposure of having the company listed on these foreign exchanges and remember George Newman and others went around, and this was not an inexpensive project.

KIRBY: No, it was very expensive.

TERRY: And we got ourselves listed and there was an advantage-I can't remember the details-for employees who were resident in the U.K. because they could sell stock in British pounds and it was a little simpler for people locally to deal with it but I noticed a couple of years ago, we knocked it off because it never did really produce very much of anything but it was one of a number of well-meaning suggestions by country managers and computer people trying to get our name in front of a bunch of people who had never heard of us: bankers and businessmen and others. It included putting big signs on top of the buildings. There was a program to put big Hewlett Packard signs, and it included renting downtown locations with the express purpose of being able to put a sign on the top of a building.

KIRBY: Being visible, yes.

TERRY: And it included getting involved in sports marketing. You remember all the sports marketing?

KIRBY: Yes, the Europeans loved that.

TERRY: We were involved in and a number of things. The Japanese got involved in it. They got hooked up with Nissan, who was also buying LEDs from us for their automobiles and we were a co-sponsor of the Nissan racing team. I remember one day seeing pictures of the Nissan racing team that the race car said Hewlett Packard Computers and they were set in 48 or 58 percent of the build of instruments because 58 percent of our business in Japan was instruments, so me and my instrument friends went non-linear and said, "We're not paying this \$700,000 bill! Look, your car says 'computers' on it and they're computer people!" They also had ... I guess I gave them to Karen, Dave, a YHP newsletter in Japanese with colored pictures on it for employees that has the picture of the racing team and the cars and it has "Ms. Nissan YEW" or "Ms. Nissan YHP" and there are these three scantily-clad Japanese babes and it looked like they were about 17 years old and they weigh about 85 pounds apiece with these really tight, scant bathing suits on, and I thought that was really kind of unusual and kind of non-HP.

TERRY: But I also found one of these issues that had the specs on these girls, besides their names-typical Japanese. It had their weight, their dimensions, metric and kilograms and meters and their blood type.

KIRBY: Their blood type?!

TERRY: Oh yes. This is done in the YHP newsletter today, when they hire new employees, it has the blood type.

TERRY: In case you might want to get romantic with these people. Real Japanese!

KIRBY: I never knew that.

TERRY: But anyway, '89 we sold South Africa. Got a group of ex-employees. Marius first and others, and we sold them the business.

TERRY: So that disappeared from the annual report. 1990, not a good year. Revenue up 11, earnings down 4. "Disappointing" it says. Stock prices down and the discounts are up. Guess what? Hiring controls! Hiring controls are back in and we're down 3,000 for the year and we reorganized again and this is where we go from this marketing-oriented factory thing back to a conventional product-oriented thing, and Lou Platt is an executive vice president and he's in charge of computer systems and Dick Hackborn is an executive vice president and he's in charge of computer peripherals, and Terry is an executive vice president and he's in charge I guess we called it measurement systems. So this is when we had the company divided up into three parts. Ned Barnholt becomes a vice president and we go T&M and we go back to dedicated sales forces. We have a sales force for computers, we have one for peripherals, and we have one for instruments.

KIRBY: The merry-go-round came around again.

TERRY: The merry-go-round came around again, and that was really tough and I was kind of in the middle of the charge of making the change and I had a really able assistant by the name of Larry Potter, who probably endeared himself to Dick Alberding to the point where Dick Alberding has a voodoo doll named Potter with a lot of needles stuck in it because we were directly attacking Dick Alberding's empire and his job. His job was to run this combined sales force. When we split the sales force up, Dick continued to be the corporate vice president of the marketing until he retired but he no longer ran the sales forces.

TERRY: So we were really threatening his existence and he knew it and we knew it and we pounded away on John Young a lot. Larry Potter and I, we'd gather a lot of facts and a lot of feelings, and we finally convinced John that we really ought to make this change, and I think he was as concerned as we were but he needed some time to figure out how to get this done but we finally got it done in 1990. And then the computer business organization and its executive committee was dissolved. Dean was no longer in charge of computer business operations and he "joined the office of the president to work on internal initiatives" it says in the annual report. I don't know any COO title was invented then or not but probably it was invented shortly thereafter when he joined the John Young office.

KIRBY: Chief Operating Officer.

TERRY: Right. And that, Dave, is the end of my notes because that's where the annual reports ended in 1990 and I don't think there's any use going on further because I retired in '93, right? Yes, in '93, end of '93 and everything else is kind of current history.

KIRBY: Let's see if I've got anything here that we didn't cover. Tell me, the company right now seems to be performing beautifully. Why do you think that is?

KIRBY: Here we are in 1996.

TERRY: The way it's performing is the way we all dreamed it would perform in terms of balance. You know, we had all these years where-it wasn't true every year-but there were a lot of the

profits were earned by the traditional businesses and we had all these struggles going on, trying to figure out how to earn a profit in these new businesses. And I know today, I'm not privy to the numbers, that the computer business is very profitable, and the printer business is profitable and the traditional businesses are as profitable, if not more profitable, than they've ever been-particularly T&M is getting, you know, it's \$3 billion plus and that makes a difference in terms of earnings. So everybody is kind of pulling their weight. We had all those years where we were trying to learn how to do that. But that's right. Every year, several divisions would be doing very well but then there were two or three that weren't doing well, they were losing probably, and it tended to pull the thing down. Yes, we used to sit around and say, "Gee, if only all these divisions were ... could be at the top of their gains", you know? Or if their division X could only make half as much money as division Y, because they were growing fast and they were using up a lot of assets also. By business, T&M is doing very well today and we're kind of cashing in on some of the initiatives we started a long time ago, particularly in expanding our measurement horizons into communications testing and semiconductor testing. Communications testing started a long time ago. Peter Carmichael and the famous microwave link analyzers and even before that, we made specialized products for the Bell System. We decided a long time ago that communications was going to be a big growth opportunity. We were going to have to learn about it. We were going to have to get out and take some risks and the military aerospace thing was going to go away or it was going not be a growth business. And then the other one, semiconductor, and that's done very well. Semiconductor test has been a lot more difficult to do. We've got big complicated multi-million dollar systems. You've really well-entrenched competitors but I've been told some of the initiatives-both in Berblingen and at YHP have really paid off and their doing very well in those two areas. And then they've kept the really basic instrument refreshed all the time. Analytical has been struggling. The growth has not been very good lately. It got some new products out. We probably should have tried to broaden our scope of interest some time ago. We weren't able to do it. We tried this thing in genetic engineering with GenenChem; it didn't work. We tried some acquisitions of Applied Bio Science. We couldn't pull it off. So they are still kind of in their traditional product lines and they need to get into some new things. Now they've got some new leadership. Let's see what they do. Medical has had some problems the last couple of years I think mostly related to just the U.S. health care market, not so much competition or products but they're doing okay and they are getting further and further into trying to really learn how to use computers to improve the efficiency of health care: bedside terminals and stuff like that. The components business has been red hot the last three or four years. The basic products like the LEDs and so forth are doing fine. They keep finding new applications: outdoor billboards, automobile tail lights-although the automobile thing has been pretty slow. Their big driver has been in communications components and a lot of it is the Avantek acquisition that brought us a lot of really good technology in communications components. And then the RISC architecture of the computer business has really paid off! They done a great job of putting the technology to work. And they, like everybody-particularly computers, PCs and the peripherals folks-the management has really understood about how you've got to manage your expenses and what the ratio of your expenses are and if you grew up in T&M, you've got to throw all those lessons away and you've really got to run a skinny R&D operation, concentrating on a few projects, a really skinny marketing operation because to price competitively in the marketplace, you're going to have a 70 percent cost of sales and if you're going to make 20 percent pre-tax, you've got 10 points to work with and you can't do anything different. And some people at HP learned the hard way, including me and others. PCs and personal computers, you just can't spend 10 percent on R&D. It won't work. And people, the current managers, really understand that and the balance is good. I hope they keep it going. Also, I might add that investments in all those years in international really paid off. I've lost track, Dave, but for a while we were gaining one point per year between the balance between domestic and international and I don't

remember the last annual report-58 percent?

KIRBY: I think, yes, or maybe it was 60 international, 40 domestic.

TERRY: And you look at the ratio of the population of the U.S. to the rest of the world, and you think about the kind of products we're making, you know, I don't know where that ratio is going but they have a lot of use outside of the United States.

KIRBY: That's right, that's right. So a lot of those investments really paid off.

TERRY: I don't know when the switch occurred where international finally exceeded domestic.

KIRBY: I don't remember either.

TERRY: I think ... I asked Frank about it. He told me it was time ago. I mean, but then it would go back the other way, I mean, it depended upon the year. Yes, there was a year or two where it bounced back and forth and I thought I remember picking it up in some of those notes but I could be wrong. I think it might have been ... well, the numbers are in the annual reports, so if you did enough research, you'd find it in there somewhere.

KIRBY: Right, right. Well, Bill, I guess that's it, huh?

TERRY: All righty, fine, good.

KIRBY: For now? Good. If you have any loose ends, we can always wind up later.