Taiwanese IT Pioneers: Stan (Chen-Jung) Shih

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施振榮英文文字稿

Ling-Fei Lin: I am Ling-Fei Lin. The date of today is March 21, 2011. This is one in our series of oral history interview with Taiwan pioneers in the semiconductor and computer industry. Our guest today is Stan Shih. Please introduce yourself with your name both in Chinese and English, Mr. Shih.

Stan Shih: My name is Chen-Jung Shih. I go by Stan Shih.

Ling-Fei Lin: Would you like to talk about your background? Including the place and year you were born, where you grew up, and your family? As we all know, you have a great mother. Please tell us more about her influences on you.

Stan Shih: I was born in Lukang in 1944. The city was the second largest one in Taiwan back then. The biggest city was Tainan and the third one was Taipei. My father passed away when I was three years old. Since then Mother and I relied on each other. She brought me up as a kind mother and also a strict father. All I knew was being a good boy, focusing on studies and absorbing knowledge. I went to Chang-Hua Middle School and Senior High School. In my second year of senior high I won the Edison Award. Meaning I got the highest score in Math and Sciences school-wide. At that time, my GPA was fair, yet my scores in mathematics and science subjects were at the top. So you can see how bad I was in Liberal Arts. The Edison Award encouraged me a lot. However, when I took the College Entrance Exam, the result was not satisfying. I was in the department of Mathematics of Cheng Kung University (NCKU). I took the exam again the following year. I entered Electronics Engineering of National Chiao Tung University (NCtU). It was the first year for NCTU to enroll undergraduate students; Electronics Engineering was also the first department for Electronics. When I was in college, we learned transistors instead of vacuum tubes. We also learned digital technologies as well as computers. Relatively, we learned more about digital technologies, thereby seizing more opportunities of future career in an early stage. When I was in high school, Mother allowed me to go to Taipei, living far away from home alone. It was a precious experience to live independently for more than a month. During that period, I learned to live and think independently. It benefited me a lot with my future career and life.

Ling-Fei Lin: So it was during one of your summer breaks?

Stan Shih: It was during summer break

Ling-Fei Lin: What did you do in Taipei at that time?

Stan Shih: In the name of going to cram school, I actually watched basketball games of the five final teams from four countries. In addition, I also went to National Taiwan University to see Chuang Kwang-Yang and Cheng Chi. I was interested in absorbing new and fresh things.

Ling-Fei Lin: So you moved around Taipei at that time?

Stan Shih: I lived in a classmate's place in Taipei.

Ling-Fei Lin: This experience taught you about learning to be independent?

Stan Shih: In fact, studying in NCTU changed my life the most. That was the second year I took the entrance exam, so I was a bit older than my classmates. I already partook in some extracurricular activities in NCKU. Thus, I established student clubs and learned how to serve others. This experience benefited me a lot. I built up good relationships with classmates, and I did brainstorming to make those activities more meaningful. I learned about making innovative breakthroughs. For example, when I was a freshman I held a contest named "Four Skills". It allows roommates to team up and compete on four subjects of sports. And in the first year of graduate school, I held a round match for the whole dorm with

about 60 people. Everyone joined in the contest. The whole contest was divided into four groups. If you were bad at table tennis you can play with other beginners. We put up the group list on the wall. If you happened to meet up someone you haven't competed with, just go have a competition and put the results on the list. This contest continued several moths. Everyone enjoyed this extracurricular activity. And this also brought me confidence in getting along with dorm mates, as well as doing some things for people. This experience helped me a lot with my career and the establishment of my company.

Ling-Fei Lin: May we know more about your days in Lukang? Would you please depict more about your family? And the old, but well-known, family business with incense?

Stan Shih: My family runs an incense business. I am the 7th generation. This family business was founded in 1774, and it is one of the oldest brands in Taiwan. My father led the business since he was young, which might also be why he passed away at an early age resulting from strain, probably. Mother relied on herself afterwards. She did many kinds of jobs. One that lasted longer was selling ducks' eggs; she also sold stationery, clogs melon seeds, beetle nuts, and Liberty Lottery. Selling Liberty Lottery also lasted a long time. I remember there was a kind of Liberty Lottery for the reconstruction of the August 7th Flood [in 1959]. So when I was little, the way I helped my mom was by watching the store for her, with the cashier and check-out. My mother also knit sweaters. There was the transformation from hand-made sweaters, to machine-made ones. I couldn't deal with the beginning and the end of the knitting. All I could do was moving fabrics back and forth. Of course Mother didn't want me to spend too much time in the store. Instead, she wanted me to concentrate on school work. So she usually did not let me help, and I only helped out during weekends or breaks or when business was the busiest. Such as when everyone was doing grocery shopping, at the market during rush hours like in the morning. When afternoon came she usually let me play around. It is natural that children love to play. My mother gave her only son a smooth and satisfying life.

Ling-Fei Lin: You just mentioned that the brand of your family business is one of the oldest in Taiwan. Does this relate to your branding of Acer?

Stan Shih: The DNA of branding is in my blood perhaps!

Ling-Fei Lin: As for your student life in National Chiao Tung University, why did people choose Electronics Engineering to study? At that time, you guys were very special since you were the first group of people majoring in this field.

Stan Shih: Because I read about it in the newspapers. And it seemed new and interesting. And the university is a public school. In addition not everyone can get into the first choice. Actually, Chiao Tung University was ranked as my second choice then. Because I did not get into NTU so I went to Chiao Tung University. It was not my first choice but I went there in the end.

Ling-Fei Lin: So the establishment of this department was a hit?

Stan Shih: Yes, Tsing Hua and Chiao Tung University were both very famous. To students, at least, these universities were famous. However, average civilians did not know about them. One time, people heard that someone entered Chiao Tung University, and they assumed his career would be a traffic police (Chiao Tung in Mandarin means transportation).

Ling-Fei Lin: Why didn't you go to the United States to study like most of people did after graduating from college? Why did you choose to pursue your master's degree in National Chiao Tung University after that?

Stan Shih: Indeed, it is a bit extraordinary. I like to be different from others. Therefore, I chose not to major in medicine, because all my classmates wanted to enter medical schools. When I was a high

school student, I made up my mind to take different routes. Likewise, when everyone was busy applying to study abroad, I never thought about it. Besides I didn't want to be away from my mother. That was another reason. But the most important reason is that I like to do different things than others.

Ling-Fei Lin: When did you find out about this personality trait of yours?

Stan Shih: This kind of thinking has existed from childhood. Looking back on these two decisions I feel satisfied. First, being a doctor is not easy. It's a hard life. Second, all outstanding students were studying abroad. So mediocre students like me could seize good chances in Taiwan since they were abroad and couldn't grab the chance for success. And they could only look on from overseas, instead of grabbing that opportunity to take off.

Ling-Fei Lin: So all the decisions resulted from your personal traits?

Stan Shih: Yes.

Ling-Fei Lin: Would you like to add anything about your life in National Chiao Tung University? Something like the influences of this university on you?

Stan Shih: My participation in student clubs influenced me the most. I was the president of the table tennis club, volleyball club, the photography club and Chi-Chiao club.

Ling-Fei Lin: What's the Chi-Chiao club?

Stan Shih: Chi means chess in Chinese. Chiao refers to bridge. Separating them into two clubs would be redundant. Therefore, we played chess and bridge together.

Ling-Fei Lin: So you are good at all the above?

Stan Shih: I am good at leading extracurricular activities. As for those skills I am not really good at them.

Ling-Fei Lin: Are you good at table tennis, chess and bridge?

Stan Shih: I was only average. Just a bit better than my schoolmates. It would be different if I was in another university. I think I am just fair since it was only among about 70 people.

Ling-Fei Lin: Besides extracurricular activities, what did you learn from this school?

Stan Shih: I appreciated NCTU for building my confidence. I had fun in extracurricular activities and also got good grades. NCTU was new in Taiwan at that time, the professors in Liberal Arts were all part-time. They all commuted from Taipei to Hsinchu to teach. So they were relatively kinder with grading…good students could earn 90, bad students could get 80. This was to my advantage. The average grades I got were better, I used to get 60 something points, but now in college I may get 80 something. To my surprise, I was the valedictorian.

Ling-Fei Lin: The first place in class?

Stan Shih: That's why I got self-confidence both in class and out of class. It is proven that people need confidence, which brings great encouragement.

Ling-Fei Lin: When were you first exposed to computer? What did you feel about it? What was your focus course when you were in college?

Stan Shih: I didn't have focus courses when I was in college. I majored in semiconductors in my graduate school. My only contact with computers in college was punching the cards. There were these strips of paper with punched holes. I always admired the staff who worked in a lab, because they could tell the meaning from several holes on a paper. They knew if those holes on the paper stand for 01 or ABCD, while we had no clue at all. That impressed me a lot. I studied semiconductor in graduate school. And my thesis was on MOS not CMOS. MOS is an earlier technique than CMOS. In order to complete my thesis about transistors made by MO, I made my own design and drew on Mylar paper, which is a plastic paper that was either red or transparent. Then I cut it off and then took miniature pictures of it with negative film made of glass. Then I brought the 2 or 3 inches small pieces to the lab, manipulating the whole procedure by myself. From oxide to etch everything was Mask. I had to deal with all the details by myself for my semiconductor thesis.

Ling-Fei Lin: Then why didn't you step into the semiconductor industry afterwards?

Stan Shih: It was also destiny. I worked for a Taiwanese company called Unitron Industrial Corporation. This firm conducted the assembling of semiconductors, and established the very first R&D department in Taiwan. The leader was Tsai-Hsing Chiu. He is my senior and a classmate with Ding-Hua Hu. Tsai-Hsing Chiu was perhaps encouraged by Professor Dr. Simon M. Sze, or someone from other countries with the vision of establishing R&D. When I was in R&D, I tried to use those semiconductor components to design some new products. For example, from clocks to frequency counters. After I knew more about the operation. We got a case of LSIs from Mostek, LSIs based on a calculator chip. Mostek was a company located in Texas. I made a calculator for the case. It was easy when looking back now. However, it was the very first one in Taiwan. I packaged it and requested the machinery department to design an exclusive skin for this sample. When our General Manager Chiu Tsai Hsing… he was the Director of R&D ---not yet the General Manager, he saw it and decided to put it in mass production. So we began the mass production of Taiwan's first electronic calculator. Later on, I was promoted to be the Manager of Semiconductor Manufacturing in charge of the packaging of IC and transistors. At this stage I still did some work related to semiconductors.

Ling-Fei Lin: You mentioned that you worked for Unitron; a firm conducting the assembling of semiconductors. What about your classmates? What did they do after graduation?

Stan Shih: Some people studied abroad. Most of them worked for foreign-based companies, such as TI, GI, Philco Electronics and Zenith. Mostly, people worked in Taiwan and became engineers. I got two job offers when I graduated. Both of them were provided by my senior schoolmates. One is a position in Philips Semiconductor Kaohsiung (PSK), which was in Kaohsiung. Another is Unitron in Chu-pei. My English was so poor that I did not dare to work for foreign-based firms. It was like destiny or something like that.

Ling-Fei Lin: Many people chose to work for foreign-based companies because of better pay?

Stan Shih: Yes. They offered me NTD$ 7000 per month. Four years before my graduation, foreign-based firms were looking for prospective employees in graduate schools at NCTU. They would send the students abroad for training, with US$ 200 compensation monthly. They paid US $200 for five years.

Ling-Fei Lin: Five years prior to your graduation?

Stan Shih: Yes, they were paying US $200 5 years before I graduated. Only foreign-based companies needed employees with master degrees. Other companies didn't. Unitron was a bit different. This firm needed engineers. They hired lots of alumni from NCTU as managers. That's why I got the chance to enter a relatively upper level company. At that time, there were two kinds of big firms in Taiwan: American-based ones, and the others were cooperating with Japan on household appliances. To get into the Taiwanese market, Japanese companies either started companies, or did joint ventures. In the home

appliance industry, their plants did not think about exporting, so they lacked R&D. They only learned techniques from Japan. That is to say, the electronics industry in Taiwan had not yet been shaped.

Ling-Fei Lin: You mentioned that lots of people who have master degrees held posts in schools?

Stan Shih: Going abroad was another popular option. Do you know why? There were no job offers. The master's degree was too much for the employers? Yes. They had advanced degrees that traditional [Taiwanese] businesses did not need. At that time, NTD $7000 was not a low price. People with bachelor degrees asked for NTD $3000 only.

Ling-Fei Lin: The manpower needs of MA sprang up when R&D was available in more and more firms?

Stan Shih: Exactly.

Ling-Fei Lin: You held a post in Unitron in 1971. Why you did switch to…?

Stan Shih: I entered Qualitron in 1972.

Ling-Fei Lin: What was the motivation?

Stan Shih: The boss of Unitron was also the one who supported Qualitron. He thought computers and the assembling of semiconductors are different. Hence, he invited me to start an enterprise called Qualitron. And this company targeted calculators. We immediately got into the market of hand-held calculators. We used TI chips to make the first calculator in Taiwan. This product relies on a battery for power utilization and it needed a lot of electricity and was not quite delicate. But it was the first one in Taiwan. You could hardly find firms that could produce calculators. They had the chip in the United States, but rarely made calculators. The biggest competitors were Japanese. For instance, Casio was founded around that time. Qualitron seized the opportunity. As time went by, we made better and better products. And with that, Qualitron became more and more competitive. Among all the products we had, one calculator named the scientific calculator, some called it "slide rule", created the best revenue. It replaced the calculating scale. The calculator could do operations, sine, cosine, and trigonometric functions.

Ling-Fei Lin: That was one of your inventions?

Stan Shih: Yes, I used Rockwell International chips for the calculator. The patent was registered for a keyboard I made myself with different kinds of chip. I designed a mold with different places for keyboard making. Besides I used a metal board as the mask. Whenever a new chip was released, I could use the mask to customize what I needed for keyboard making. Just cover up the holes that we did not need. In this way, I saved a lot of time, and was capable of releasing our new products faster.

Ling-Fei Lin: Compared with Japan?

Stan Shih: Yes, we were faster than Japan. What's more, the quality of our products was better. That's why I insisted on making the keyboards myself. Of course, nowadays, keyboards have been standardized. However, there are still differences especially with calculators. The characters printed are still a bit different. You needed to manipulate important segments like keyboards. On the other hand, since chips came from the US and Japan, you had to localize what you could control. As for the molds, of course they are a lot more advanced. Compared to those from 40 years ago. We had to go to San-Chong District to look at products. The technique was not quite refined at that time, it was common to see some furry edges on the molds. In addition, the molds clicked when you put two parts together. Such was the technical level of that time. Now, it is entirely different.

Ling-Fei Lin: Did Qualitron have its own brand at that time? Did they sell products overseas?

Stan Shih: That's what you asked me earlier. Whether I do branding because it's something that runs in the family or if it's destiny or chance. If you manufacture the same thing as they do in Europe or the U.S., then who do you sell it to? At that time, people didn't have the concept of Original Design Manufacturer (ODM). The US and Japan brought their designs to Taiwan to be manufactured.

But now suddenly Taiwan was able to design some new products. You need your own brand to compete with the U.S. or Japan. When we expanded the market with our own brand, there was not yet Original Equipment Manurfacturer (OEM) at that time, but as our brands came into the market, because of their strengths of high speed and low cost, the first to notice were our competitors….people who made calculators and computers and not the [end] customers. After analyzing our advantages they realized that they might have to depend on Taiwan, especially Qualitron, in the long run. That's why some global brands sought Taiwan's assistance to do OEM work. Qualitron and the like started branding in the United States. Rockwell International and National Semiconductor came for OEM work. Since Qualitron was the leading brand of electronics and industrial design, it became the pioneer of ODM. So there were first brands and then there was ODM. Therefore, the flourishing of information and electronic technology in Taiwan, owes a lot to these companies' brave vision on branding. Acer and Qualitron are the best examples. Actually, they had no choice either for who would buy from you? You had to first prove your capability before orders started to flush in.

Ling-Fei Lin: About when did Rockwell place the first order with Qualitron?

Stan Shih: It was already in 1973.

Ling-Fei Lin: 1973?

Stan Shih: Around 1973, 1974

Ling-Fei Lin: Inventec already began their OEM business at that time?

Stan Shih: Yes, they did. However, since we had our own brand, we did not just give up our own brand. This happened with computers as well. Thus, if you offer some alternatives to customers, they might not choose Qualitron but San Ai. There was not yet Inventec. San Ai existed first. Inventec probably began its business around 1974 or 1975. The first one to get the OEM orders was San Ai. And there was another one called Chang Cheng (Great Wall), which was founded by Tzu-Hou Tao, Chuan-Cheng Tao's father. San Ai was established by San Te, a Construction Material Corporation. Afterwards, Qualitron became Acer. San Ai was the origin of Inventec, Kinpo, and Quanta.

Ling-Fei Lin: They all were ODMs at that time?

Stan Shih: Yes. You can't do ODM unless you have your own brand first.

Ling-Fei Lin: They already had their own brand at the time?

Stan Shih: No. We got our own brand to stand out and become visible worldwide first. This proved Taiwan's capability with these techniques. But not every firm who followed got their own brands. In fact, another reason for this was that. Mr. Sen Lin, the owner of Qualitron, majored in marketing. Hence, he knows much about branding. When OEM orders came in, he decided to do OEM and ODM simultaneously. If customers requested you to focus on their orders only, you might say yes and not, have your own brand, but Qualitron denied this kind of request, since Qualitron did not want to give up our rights of having our own brand.

Ling-Fei Lin: What was the ration between OEM and OEM? The former was bigger than the latter?

Stan Shih: Because once in the United States Rockwell International was fast and had considerable volume. Meanwhile, our products were still being sold, but not in the U.S. market. However, they were very popular in Europe like Northern Europe. That is to say, if we got strong and powerful dealers in one area, there would be considerable sales. But in the United States the scale is relatively…the situation was exactly the same as what Acer experienced later on…it is easier to do your own branding in small markets and hard in big ones.

Ling-Fei Lin: You meant Qualitron did a great job in the United States with OEM, but the ODM targets didn't include the States?

Stan Shih: Yes, never. Qualitron did not perform well in the United States. I once flew to Los Angels trying to sell our own brand in Macy's Department Store. This experience impressed me so deeply. We had sent out all the products, but the payment never came. It was only afterwards that we realized that we didn't send out the invoice. What is the difference here? Lots of foreign products have their local importers. And these importers will help them with the letters of credit. But when we were trying to open up the US market, we didn't have an importer over there, so we had to establish our own branch as the importer. Since it was the first time we did business in the US, we learned about this the hard way. And that's why we didn't get the payment.

Ling-Fei Lin: How much of the world market of calculators was taken by Taiwanese OEM at that time?

Stan Shih: The ratio went higher after 1974 and 1975. Needless to say there was not only Qualitron. But also San Ai and Kinpo, both did very well. There were other competitors and some controversy. Because Qualitron was always the best it had very good credit so the bank loaned it large sums of money. Then Qualitron lent out money to its brother company in the textile industry. However, the textile industry suffered great damage around 1975 in the energy crisis, thus pulling Qualitron under with it.

Ling-Fei Lin: May we claim that the first ODM products Taiwan produced with high ratio in the world is the calculator?

Stan Shih: Of course. Later…

Ling-Fei Lin: Do you know the exact number of that ratio; the climax?

Stan Shih: When we began, Japanese companies like Sharp were still powerful. When it came to 1976 1977, or 1978, nearly everything, such as the smallest credit card, was produced in Taiwan. Because we could make calculators, Japan couldn't compete with Taiwan anymore. Some dealers wanted their own brands so they just put up a name and started selling. So the volume of calculators produced in Taiwan was quite big.

Ling-Fei Lin: Did the care of Qualitron's parent company's investment in textile industry impact your way in management?

Stan Shih: At that time, Qualitron was, well, the family-owned management mentality was universal in Taiwan. When discussed in today's terms it was not the most ideal system. Money that belonged to the family and that belonged to the company and the benefited all those concerned. Since the stockholders are all family members, they were the priority concern. This management model may likely ignore the profits of employees and suppliers, dealers, consumers. But it was important to strike a balance.

But it was the way things were done back then. That was no big deal. We even used to call Qualitron…because it was very prosperous and recruited many talents that they had always longed for…the world for young people. The slogan we used in the commercial for recruitment was actually "the world

for young people". No one expected that the dream would be broken.

Prior to this I took charge of R&D, manufacturing, procurement and the warehouse for the OEM and domestic markets. From doing all this, I sensed a long term opportunity for microprocessors, a.k.a. calculators. If we look back on the history of microprocessors, the very first one, 4004, a 4 bit microprocessor designed by Intel, was a customized product for Busicom, based in Japan. Intel used a CPU which was what calculators used. However, Busicom didn't want to utilize this product, so Intel revised it as an all-purpose one. Indeed, Rockwell International can be regarded as the No.1 in the field of calculator. They also had a 4 bit microprocessor called PPS4, Parallel Processing System 4. Also, Rockwell International had an 8 bit PPS8 already. On the other side, Intel got its 8008 released.

I sensed a strong motivation to learn the new technology, so I wanted to enroll myself in a seminar in the United States. Intel's seminar enrollment was already full at that time. Since Rockwell International and Qualitron were business partners, I went to their seminar instead. After I finished the training in Rockwell International, I brought what I learned back to Taiwan. Meantime, Chia-Ho Lin and Shao-Hua Huang the heads of R&D, studied this promising and important trend since [they thought that[this may lead to the second Industrial Revolution. However, most of our engineers were not familiar with digital technology, so we invited Dr. Ching-Chun Hsieh, and my classmate, Sin-Min Tsai. They taught in the Taiwan University of Science and Technology. They taught us the new technologies in English after they had the basic knowledge. Since I had already gone there for training, I hoped my engineers could also go abroad to extend their visions. Soon after, we sent some of them abroad for training. They absorbed 8 bit techniques. The management level in Qualitron had made up their mind, to go from calculators to do more applications with microprocessors. And Qualitron had even been acting as an agent for MOS technology in East America with KIM1 learning kit. Qualitron also cooperated with the China Productivity Center to train and popularize microprocessors to existing electronics firms, or home appliance factories. Thus, Acer could be considered as an extension of Qualitron's vision of the development in the long run. That's why Kenneth Tai, who didn't work for Qualitron, and other persons he invited…

Ling-Fei Lin: He didn't work for Qualitron?

Stan Shih: No he didn't. Except Li-Chun Shen and my wife. Everyone including Chia-Ho Lin Shao-hua Huang, they were all my colleagues in Qualitron.

Ling-Fei Lin: Did they all graduate from National Chiao Tung University as well?

Stan Shih: Tu Chin-chuan majored in Industrial Design. Shen's major was International Trade or language-related. Everyone graduated from National Chiao Tung University. We've known each other since college years. Because the most distinguishing feature of NCTU is that everyone lives in the dorm, and the campus was not quite big we used to run into one another. Thus you had the chance to know each other.

Ling-Fei Lin: You invited them to join the team since you knew these people already?

Stan Shih: Formerly…

Ling-Fei Lin: KY said that you didn't invite him to join in.

Stan Shih: No, because he had already left, because KY had already left Qualitron to go to Ta Tung. After the company was founded, we asked him to come back and join the team. As for Ken Tai, I knew him since he worked for MiTAC and acted as a dealer for Intel. As I remember, he promoted Intel to Qualitron and he also arranged Lin Chia-ho or Huang Shao-hua to go for training in Intel in the U.S. At that time ,I felt that Intel was the most enthusiastic in promoting microprocessors, even though their firm was not likely the best. In this, the68000 of Motorola, and MOS technology 6502 of Apple, these were

better than Intel's microprocessor. People were developing different things with different focuses individually. Although Rockwell International also did it well, the company didn't focus on this product. Unlike Rockwell International, Intel focused on microprocessors and put a lot of effort into this.

Ling-Fei Lin: Would you talk about the time between the Qualitron and Acer? What drove you here?

Stan Shih: We found out that the turnover of funds in Qualitron was not in the right place afterwards. The sales department had great performance at that time. So they used the order LC to loan money…

Ling-Fei Lin: What does LC mean?

Stan Shih: The letter of credit. If you can use a letter of credit to loan money, theoretically the capital should be ample. When we contacted people in the financial department, we finally found out the financial status wasn't quite good, because the company lent too much money to its affiliates, who were not able to return the loan. And I was the highest representative of the labor.

Ling-Fei Lin: You were in the General Manager position?

Stan Shih: No, I was not. I was the Assistant Manager, the Vice-President at that time. I was also on the list of the Board of directors. However, we never had a chance to have a meeting.

Ling-Fei Lin: The family members owned the right to make every decision?

Stan Shih: Yes. Thus I suggested the owner to be careful about the line of credit. It was okay to lend money, but it was also very vital to limit the quantity. And he replied to me saying that it was strictly a family issue. After the conversation, I realized that the world of young people was going to sink. We had to find a way out to build another world. Soon after we decided to start from the very beginning. We gathered several coworkers, and because investment capital was extremely limited, we had to raise a fund of around a million dollars on our own in order to found Acer. My wife and I put up five hundred thousand, and others contributed around one hundred thousand dollars per person. In fact, in 1976, 100 thousand dollars is a great deal already. George (Shao-Hua) Huang borrowed money from his sister. Kenneth Tai asked his family for help. It was not easy.

Ling-Fei Lin: Then how did you have that much money?

Stan Shih: My mother saved up a lot of money.

Ling-Fei Lin: You relied on your mother as well?

Stan Shih: Indeed, yes. My mother sponsored me. And I never spent extravagantly, so I also saved up some money. In fact, when we needed working capital, the bank was not our savior, but my mother was. Also, my father-in-law helped us out, too. Acer's growth would not have succeeded without their help. Gradually in the growing process, I kept increasing the capital.

Ling-Fei Lin: You mean Acer?

Stan Shih: The growth of Acer relied heavily on capital increase. In the first decade our growth was doubled each year. So there was a growth of about 1000 times in the first ten years. It was doubled, doubled, and doubled every year. The 10th power of 2 is 1024 times, so it was about 1000 times. That was how it grew and the capital had to follow. I couldn't ask friends and relatives for help, because they knew nothing about new technologies. For example, the word microprocessor sounds like some kind of machine.. People think about gardeners, who sell machines that are used in gardens, that a gardener would use for gardening, that was the way it was used, but no one understood. When your relatives

cannot understand, they won't invest. And of course the bank won't support you either. Moreover, there was no venture capital for us to use.

I had to request that my employees support the company by borrowing 10 percent of their salaries, with a 50 percent bonus. So I added to our capital in this way over two years. I should also mention in order to expand sales. Before asking for capital from our employees, I had already found a partner. I had a former classmate in the US. His name is Chang Kuo-Hua and worked for HP. He happened to come back to Taiwan. I told him that I needed his assistance. Because we were dealers for certain American products he could help us expedite. Or, find the latest information and negotiate prices by being the contact with our suppliers in the U.S. And it would be more convenient if we may purchase products in the U.S. on credit, leaving out the process of letters of credit. I think we shared it 50-50, but I forget. Thus we established a joint venture.

Ling-Fei Lin: That was located in the United States?

Stan Shih: Yes. And we copied the model in Taichung and Kaohsiung in order to extend our business. All of them were my schoolmates in National Chiao Tung University.

Ling-Fei Lin: This business strategy derived from money?

Stan Shih: Both money and talent were necessary. The risk for us was relatively higher than others because we didn't know if the market was going to work or not. But since there was the opportunity, we had to incorporate the risk and the personnel. You had to shoulder the risks, not me alone, but everyone. The joint venture model was duplicated in each and every branch we had. 50 shares held by the local branch and 50 percent held in Taipei. Due to rapid growth, we exchanged listings afterwards. They were talking about 5 in 1 when we were already doing 4 in 1. In particular we adjusted the overall arrangement of human resources. For example, we relocated Simon (Hsien-ming) Lin from Kaohsiung to Taipei, because we wanted him to bring his talents into full play. And to expand the market, we also integrated in the US. Similar cases happened in the U.S. and other branches. Jonney Shih, K.Y. Lee, Simon Lin, Hung-Yi Lu and Kuo-Chih Tsai all became shareholders.

I should go back a little bit and explain more clearly. Li-Chun Shen and Chin-Chuan Tu played vital roles in the early stages. Chin-Chuan Tu took charge of the industrial design. Doing design service helped us earn more money. Take the microprocessor for example, in order to design its applications; it takes around a year to manufacture the products. Yet, to complete the design it only takes two or three months. Li-Chun Shen began to work on extra profit, especially from telephone plug assembling. That was not a very common technique we opened molds from American companies and sold the products overseas. And earned a fortune doing this. We decided to cooperate with these people from NCTU. However, they withdrew their shares because they hadn't gained profit. And did not know when they would start earning big money. My brother-in-law bought into and worked for Acer for a while. When he moved to the U.S., I asked him to sell all his shares to me, since I didn't want our shares to be overseas. And I sold all the shares of my brother-in-law to 5 people I've mentioned earlier with a fifty percent off price. The reason for the discount was considered based on the increment of the shares it did not have that value when they joined the company, maybe it cost less than 50. They earned the extra 50 for the company. So of course I could not sell shares to them at 100. I wanted my cadre to take part in a right and fair way.

Ling-Fei Lin: You mentioned that the bonus to employees resulted from having no alternatives?

Stan Shih: There was no other way. This is one of the reasons. Another one is that in order to establish a long-term business, with sufficient capital and talents in the long run, I really had no alternatives but to solve both problems at once. This is the so-called "achieve two goals with one action." So before 1984, the company was 100 percent owned by company employees. There was not even one outsider. So even when it was Mrs. Shih's younger brother who wanted to leave the company, we still had to buy back all

his shares.

Ling-Fei Lin: Compared with Bob Tsao of United Microelectronics Corporation, which company started this kind of strategy first?

Stan Shih: Acer did this prior to UMC. But UMC got the privilege of becoming a listed company earlier. They became listed wielding special rights. Since the semiconductor was supported by the government. So when it became listed it was more… UMC was founded in 1981. Before 1984, Acer had already executed the employee stock ownership project, which 100 percent of our employees owned stocks. In the 1980s, we had already had an employee stock ownership plan. You might buy the stock (internally) and share the bonus and vice versa. And we gave out our financial statements quarterly. This can be taken as a reference for the price of entering and leaving. I did this because I wanted to let everyone know clearly, how much they could make from this. I could not let the people who join in later to buy at the same price as those that got in earlier because the growth was earned by earlier people. On the other hand, if we have already earned money, when employees leave, you have to let them take the money that they earned away. Therefore, I published our financial statements every quarter. We had our internal stock market.

Ling-Fei Lin: I know the plan of employee stock ownership of your firm has great impact on the entire high-tech industry in Taiwan. Do you think that you initiated this plan and UMC were just imitating what you've done?

Stan Shih: I would not say that…

Ling-Fei Lin: Let's say you two let this happen simultaneously?

Stan Shih: What really impacted Taiwan and all other companies in this field, was that in 1988 when we became a listed company. Because all employees had invested in our stocks by 1984, even before we went public…because they were also shareholders.. In accordance with company law, the original shareholders got the priority of buying further stocks, so they added the stocks again.. Thus, somewhat considerable values were created when we went public, the amount of money and number of participants at that time was probably unprecedented. UMC was not absolutely…. For UMC, it was not necessarily investing in their own stocks first. UMC only allowed very few employees to become shareholders. What they used to reward their employees was stock bonus when it earned money (giving employees stocks as bonuses for free rather than asking employees to invest and become shareholders first) . On the other hand, we asked our employees to invest their own money, to become shareholders first, and then as a shareholders, they could share the profit. I am not so sure about UMC. I guess that UMC probably gave stock bonuses first, and the employees then became shareholders.. Before Acer entered the market, I requested every employee, no matter if one is in the headquarters or in a branch office, to open their purse to invest in this company.

Only when you invest in what you're doing, do you know how important it is to make profits and not lose revenue. Everyone shall take the risk since they are in the team. So when we started our affiliated company every employee had to share the risks. If the company did not do well, then everyone in the company should feel the pain. If you want to run business and become independent, then you have to share the risks by investing with cash. Hence, in my opinion I am not used to seeing young people that want to share the profits without sharing the risks. This concept perhaps derived from the current social values and environments. To me, the spirit we had in the earlier days was more reasonable. And of course, I will not ask them to invest beyond their capabilities. The traditional way of starting companies in Taiwan usually end in either complete success or total ruin. I do not want my associates to guarantee anything. You are allowed to invest what is affordable to you. I provide you with a stage on which you could make it big.

Taking the merger of BenQ and Siemens as an example, endorsing the merger plan is not a small issue. In fact, lots of high-tech firms in Taiwan refuse to do endorsements. Bob and I are the only two examples. Bob Tsao had capital from the government. I told each and everyone, I will not do endorsements anymore. Also, I found a bank that allowed me to do so. Since we have enough of our own reserves, all the banks accepted my insistence. And this became an essential rule for high-tech companies in Taiwan. In my opinion, endorsements are a problematic system. Although the logic of the bank seems right, that someone has to take responsibility for this, the fact usually is, the owner knows first that things have gone wrong, and then he or she released what he/she owned first. Ultimately the biggest loser will still be the bank. Even having been through so many difficulties, Acer had never cost money for any bank when we started this business. Whenever we ran into financial obstacles, instead of doing endorsements, we solved the problem with our own reserves. This is what is called being on the right track. This is my personal view on this issue. I hope that the entire society can rethink this issue.

In my opinion, the bank was a main factor in the failure of Qualitron. Take Qualitron for instance, Qualitron had limited reserves so they asked family for money or bank for loans. Banks don't care about your financial situation, so long as you can provide a guarantee and show that you have orders for product. Theoretically, in my opinion, though Qualitron's performance on business was excellent, the bank should not lend the company money with the notice of unsatisfactory financial structure.

Ling-Fei Lin: The employees were providing those guarantees?

Stan Shih: No, it's not like that. The owner provided the guarantees. As long as you can show the bank that you have personal guarantees, they will approve the loan without considering the company's financial structure, and the source of repayment. They might also consider whether it is a good company with good credit. Then the company loans money with its letter of credit. Then it uses the money to buy materials. One can also borrow money using the concept of "usance" [the time period between the date of a bill and its payment]. So when the sales are good in a company, banks tend to lend it too much money, more than they need. However, money is a terrible thing. If personal reserves and company funds cannot be separated, and if you think all the money is yours, and go out and spend it recklessly, then the company would collapse.

When I was in charge of the domestic market, every time I asked for payment to one of the dealers, they told me they wanted to postpone the due day of repayment. It was only later that I realized that the word "postpone," actually meant impossibility of doing so. I did not quite know why then. But later learned that the reason was simple as soon as we loaned money to them in cash. They dealt the money to invest in other businesses. When the investment got stuck, the dealer was incapable of repaying the bill, and the firm is likely to go bankrupt. If a business fails that way, it is hard to start once again because everyone in Taiwan wants to be the boss. This is in fact a very basic concept. But if you don't understand it, then you would never truly understand why you succeeded or why you lost the entire world if you cannot grasp these principles. Every time I get a chance, I strongly advocate this concept again and again. Earning money is not easy and we all work hard. Please do not fail because of this kind of flaw. If the structure is not right…

Ling-Fei Lin: Around 1988, when Acer became a listed company (plus UMC entered the market as well), did the employee stock ownership become a paradigm to other high-tech firm in Taiwan?

Stan Shih: Actually UMC was one of the reasons of imbalance of the entire industry ecology, since no one had faith in semiconductors. The major shareholders like Development Fund and Taipei Economic and Cultural Office (TECO) proposed a framework in which 20% of the margin would be distributed to employees as bonuses. In order to encourage everyone, this decision was wise because of course you had to encourage without looking back at the loss in the past and trying to make up for it. Because there would be no hope in that and to the investors…This is, in my opinion, at the beginning it was the investors who decided to do it this way. However, when more small stockholders came in, this strategy was no

longer suitable for the time. But because in the Science Park, the big environment was like that.

In the entire Science Park, UMC represents high-tech and this relationship between a company and its employees. And they were also more influential with their employees. They were also a listed company before we were. So the decisions they made were crucial to other enterprises. Acer had to follow suit because of its environment. Although before being listed, Acer had a different view regarding this issue. In the end, we had to adjust the ratio of bonuses to meet and accommodate the tide. When a company gets high profits and keeps growing rapidly, stockholders won't care about how much the associates get from bonus. Yet, when a company's performance on revenue is stable, stockholders won't be happy with the high bonuses the associates earn. That's why the whole industry is trying to adjust. It seems that there are no more good chances now. In my opinion, the bonus ratio of stockholders and associates, should be balanced. Since the risk investor or employees are facing is relatively lower now, the payback should be lower compared with the past. There used to be more difficulties so people needed to be encouraged to earn money. Times are different today.

Ling-Fei Lin: There goes a proverb "The first step is always the most difficult." What was your roadmap for Acer?

Stan Shih: Since we didn't have sufficient capital at that time, we chose to start from things that do not need capital, and may bring revenue in the short run. Thus we did not consider manufacturing, but imported techniques from the U.S. and spread them. Acer didn't have long-term investment at that time, in order to avoid the pressure of the need for capital, I even put it on a tab when I purchased things, and collected a deposit. Cash was used for circulating. It is undeniable that I didn't have money. That was the only way I could do it when Acer was the agency for some other companies. Another important part was R&D. Since we lacked resources for long term investments. Acer designed products to accumulate wealth. In the first 5 years, Acer designed 40 products [for others] which included a home PC for Barry Lam.

Ling-Fei Lin: What kind of PC was that?

Stan Shih: A home computer, a personal computer.

Ling-Fei Lin: For Kinpo or …?

Stan Shih: At that time, no, it wasn't.

Ling-Fei Lin: San Ai?

Stan Shih: No. It was a home computer. Lam would like to have and bring it to Las Vegas for the computer show. He was establishing a firm at that time.

Ling-Fei Lin: Quanta hasn't established that yet?

Stan Shih: No, before Quanta, after Kinpo, Quanta was making laptop products. We designed a hand-held game with 4 bit microprocessor, this we made the most, and we also designed telephones. And we had great success designing terminal machines for ADI. That was the very first time and we were the biggest in scale. We gave ADI a discount in order to win this design business. Though we asked a lower price with the design, we still made great money from this business. because the premium of export trade was added as our bonus.

Looking back, the first 5 years during which we designed products for others, Acer not only earned money, but also accumulated the best experience and capabilities in design in Asia. We have a strong basis of designing microprocessors as a result of our experience. Around 1978 or 1977, we set up the Hung Ya Microprocessor Learning Center with Chaun Ya Electronics to train more than 3000 engineers. For

example, Simon Lin taught the classes at night in Kao-Hsiung, and sold products to his students during the day. The overall environment of this industry was not mature enough, but we tried our best to exploit it and grow it from small to big. So when I look back on the past 30 years, the first 5 years impressed me the most.

Ling-Fei Lin: Acer made an application of microprocessors at that time?

Stan Shih: Yes. It's called "The Gardener" of microprocessors. Yes. We also issued 20 thousand free publications named "The Words of the Gardener" in order to promote the new concepts. This publication influenced the entire Information Technology [industry of Taiwan] a lot 20 years ago.

Ling-Fei Lin: Mitac also issued …?

Stan Shih: "MicroComputer" Yes, of course they were.

Ling-Fei Lin: These two were the biggest ones for promoting microprocessors?

Stan Shih: "The Words of the Gardener" was the first one. "MicroComputer" came out afterwards. As soon as it was issued, we renamed our publication as "0 and 1" and made a great income [from it] because there were more than 20,000 people, who had already been used to receiving our free publication. So when we asked them to start paying for it, thousands of copies were sold at once. So there was a basic income and people subscribed. It was a successful transformation. In 1982, we issued "The Third Wave" in order to promote the Micro Professor No.2 that we had just launched, and then we established a department called "The Third Wave".

Ling-Fei Lin: So you've told us about some of the important happenings in the first give years of the company, since Acer was founded in 1976—how did you feel about the course of the company after 1981? Can you tell us about…

Stan Shih: We cooperated with Chaun Ya Electronics. They had a learning machine called EDU80. This machine is one of the equipment that we had in the learning center. The professor at a college of science and technology wrote a brochure of experiments. So there was a whole semester, a whole brochure of materials. It was a very good tool and teaching material.

Max (Guang-Yi) Wu, for example, as soon as he graduated from college, we sent him there straight away for he had already learned related knowledge in college and the employees we had to train were all 30 something or 40 something years old. And they were already middle or higher level managers who had graduated many years ago. So as soon as he graduated from college, we wanted him to teach the latest stuff to our associates. To him that was also a process of learning. So many of our new hires were also teachers who trained our employees.

We were also the agency of Unitron. We wanted to export Taiwanese learning aid machines. So we began to promote their products like EDU80, via bringing it abroad for exhibitions. However, the machine was too big and too expensive to sell. There was a man called Yih-Cheng Chen. He developed firmware, something like the bios of a microprocessor, with the development of spare parts. We developed a better, smaller machine with a more competitive price, called the Micro-Professor I (MPF I) and sold it abroad.

About the learning machine, in 1976, I've tried once with MOS technology 6502. Five years later, in 1981, EDU80 made me realize that I really should have a product like this, which is easy for users and with a friendly price. The price at that time was about 300 to 500 dollars each. And the cost per product was around 50 or 60 [dollars]. Or even 30 to 50 [dollars]. I may sell mine at 150 dollars each, and I may give the dealers a discount and sell it at 100 [dollars] or so. The revenue would still be good. So we talked to Yih-Cheng Chen and promoted our new plan. We already had the software plus our hardware

advantages, because we were acting as an agent for many components. So we were also familiar with the price of components, we started to manufacture and launched our Micro-Professor I. And because the structure was similar to EDU80. So we could use the same brochure of experiment that Chaun Ya Electronics wrote.

Ling-Fei Lin: Didn't this infringe on their intellectual property rights?

Stan Shih: We bought the intellectual property rights of course. We not only bought the intellectual property rights, but also the software and even the brochure for using the product. The most important of all, I requested my classmate Che-Ho Wei, who just came back to Taiwan to translate the brochure from Chinese into English.

Ling-Fei Lin: Che-Ho Wei?

Stan Shih: He once acted as Chairman of the National Science Council. The idea of this product came out in 1976. At the next stage, we were able to control the overall cost and product. Besides the hardware, we already had the software and the brochure. Micro-Professor I won a lot of admiration when we showed it in several International exhibitions. In particular, one time in Japan, Micro In Circuit Emulator (MICE) of Microtek was displayed in the show as well. MICE is also a simulator of microprocessor, but a bit more high-end than our Micro-Professor I.

Something intriguing happened. A journalist of "Chip", a magazine in Germany, wrote an article about our Micro-Professor I, but put Microtek as the name of the company. Thus, letters and deposits flowed into Microtek for Acers. We set the price at US$100. Some people just put US$100 in an envelope, and said that they wanted a sample. Microtek kindly gathered all the orders they received, and sent them back to us. This was just an interlude. However, you can see how popular Micro Professor I was in its targeted group due to its friendly price and market demands, and it even came with a well-organized user guide that the U.S. couldn't even offer. Sales of this product were booming. Because of the great demand, and limited experience, in addition to a limited space, at the Science Park, we asked Delta [Electronics] to OEM it because of its high-grade product quality. This made our Micro Professor No.1 become inexpensive, high-quality, and useful. That was really a hit.

Ling-Fei Lin: Did Delta [Electronics] manufacture system products at that time? Why did they OEMed your Micro Professor No.1?

Stan Shih: No. We knew each other already. And Delta was trying other approaches [to the market] besides boards. They had high quality techniques and training. But what I was truly proud about Micro-Professor I was its good quality. So we built a really good brand image of Multitech (predecessor of Acer).

Ling-Fei Lin: Engineers and……?

Stan Shih: Yes, engineers and other personnel [who had] majored in science and engineering. What impressed me a lot was that when I traveled for business in the 1990s, a lot of associates who worked abroad told me they grew up with Micro-Professor I. They used this machine to learn digital technology.

Ling-Fei Lin: Micro- Professor I was the start for Acer on branding?

Stan Shih: Yes, it was. I was planning to promote Taiwan's own brand products world-wide at the very beginning, internationalization of our brands. For instance we did help ADI promote its business in Europe and made it great. However, the order volume became too big. It was better to do ODM so we gave up.

Ling-Fei Lin: They gave up doing their own brand?

Stan Shih: As I mentioned earlier, we were hoping the brand EDU80 could go overseas to bring our own products and our own brands elsewhere [in the world], this idea was already there when I started the enterprise. Everyday, I saw the media talk about how Taiwan has to do R&D and brand name marketing, but they only talked. Someone had to do it. Of course everyone agreed. The problem was whether we had the ability to do it. So we found a practical way to increase our R&D ability, by using others' money and then investing it in R&D, practicing International Marketing with others' products. Micro-Professor I was the first product to put marketing strategies and R&D capabilities into use. Before this, we were the agent for some American products. Through this experience we learned about International Product Marketing. And we were able to implement all this while making Micro-Professor I.

Another important thing was we acted as dealers for American products. And in the process we learned how to market international brands especially technological products. We also learned how to train dealers and maintainers. Acer was the first one in Taiwan to grasp experiences from different places and hired 50 to 100 professionals to Taiwan to train our employees.

Ling-Fei Lin: May I confirm something with you again? Did you think of doing your own brand at the very beginning?

Stan Shih: Yes, I did. In Taiwan there was a lack of R&D and brand names and it only developed with the "smile curve" [an illustration of value-adding potential of different components of the value chain in an IT-related manufacturing industry developed by Stan Shih] later on. Being pragmatics was essential when dealing with branding. In addition, innovation was another vital part for a brand. Micro-Professor I seized the chance so that it made great profit.

Ling-Fei Lin: You'd like to do overseas brand marketing for TECO and Tatung, but they refused to?

Stan Shih: Yes, we did. We tried to do brand export for them with monitors. We didn't have buyers, but we had lots of excellent trading companies at that time. The trading patterns became indirect. They had buyers overseas. And their buyers needed them to find a supplier for them because I did not have a buyer either and we could not deal for buyers yet. But on the other hand, in high-tech industry, indirect selling was not common. Like the IPO in Taiwan, the buyer sets up here. And does business directly. This is their trading style. Indirect trading was an earlier trading style.

Ling-Fei Lin: Could you talk about what initiated Acer to exploit IBM compatible computers? Why was it authorized to the Industrial Technology Research Institute at first, and why did it become so that 5 companies in total were in charge of this project?

Stan Shih: We had MicroProfessor II before we started making IBM compatible computers. It was a little bit related to Apple II… everyone was copying others' ideas. We were trying to stand out from this and develop something different. MicroProfessor II was a hit at that time. But there were concerns about intellectual rights regulations. Related laws in the US were not yet quite clear.

However, the American customs detained our products, since the manual guide involved plagiarism, not the software itself. We hired a professor to translate the manual from some comic book, "Learning to Use the Computer with Comics". It was only later when we found out that a major part of the content was plagiarized from Apple's brochure. This brought us a great deal of trouble.

In 1982, in order to promote MicroProfessor II and III, I went to the U.S. for the Comdex Show. Everyone was talking about Compaq since it had [just] launched a transportable computer that could be carried with you in a box. There were already a lot of PCs, with IBM, HP, Wang, TI, and Japanese companies. They were not compatible with one another. And then suddenly Compaq released a product that claimed to be transportable. When I visited Comdex, I realized the product was actually compatible with IBM. It was the very first product that could be compatible with IBM. So it drew everyone's attention because of that. I

was stimulated to do IBM PC compatible products. I handed in my proposal as soon as I got back.

However, our R&D department including Jonney Shih, was in the middle of developing our MicroProfessor III. We lacked talents [personnel] to do this. Meanwhile, the Industrial Technology Research Institute was promoting related projects. That's why we chose to cooperate with them. In 1983, we spent fifteen million to authorize them to design an exclusive product. That was in 1983 at about the middle of the year, because it was launched by the end of that year, so it was probably August, September or October. When the product was about to be launched, Tieh-Ming Sung of Industrial Development Bureau said that the ITRI cannot just design and develop products for one company only. It is okay now for ITRI to assist one company on development. It was not allowed before, because other firms might want to cooperate with ITRI as well. That's why ITRI opened it up to 5 companies, so I earned 12 million, because the design fee was 15 million divided into 5. So all I needed to pay was 3 million and we got the design. Since we already had the ability and the cash, we announced the product earlier. We made an announcement in the end of 1983, and launched the product in 1984.

Ling-Fei Lin: Did you complain about it?

Stan Shih: No, I earned 12 million. I couldn't complain.

Ling-Fei Lin: But the revenue was shared by 5 companies?

Stan Shih: It doesn't matter, because all the 5 disappeared. It did not matter anymore afterwards. Indeed, the reason why the product was held in joint custody was due to the infringement of the BIOS that ITRI had. No one wanted to infringe on anything. But lacking a clear idea of infringement, it is likely to run into this kind of problems. For example if we have seen the software, then no matter how you write it, you still may infringe on it.
Fortunately, ITRI is one of the government organizations. Senior Minister Lee dealt with IBM on the feasible ways on avoiding infringements.

However, the date of delivery could not wait any longer. Hence, I spent another 30 million to license a concurrent CPM on purpose of the letter of authority. This authority claimed to be compatible with IBM PC, MS/DOS compatible. The so-called compatible was 98 or 99% compatible. The 1 percent that is incompatible would actually cause some problems. We had an inside joke about this. "If the original one has a bug then you have to have the bug, so that it really is compatible". So the hardware of the first product I designed its I/O, 8051, or 8251. I used a more advanced I/O from AMD. However, IBM used an Intel I/O. Although I used a less expensive, yet more effective one, it turned out to be incompatible. All I could do was downgrade it and design it the same as IBM. So this is what we learned from the past the importance of compatibility. We paid a great amount of tuition fee to learn from this experience on the importance of compatibility. From MicroProfessor II to PC, that was a pain we had to go through.

Thus, when Acer developed Chinese computers, we thought about transparency. Before, the first generation of Tien Lung had thought about the transparency as well. IBM, HP, and Wang developed this kind of computer and software for the Chinese. In our opinion, compatibility here means Chinese computers have the same things English computers have. It was the most up-to-date concept. Jonney Shih's team brought up an unprecedented concept to make this come true. We developed a Chinese computer without changing the majority of the application software, because it only dealt with 0101. No matter what language you use, it doesn't matter. So if you make a comparison between Chinese and English, and identify the cognitive differences, computers in different languages are actually really compatible with each other. Since then, Chinese and English computers developed synchronously. The path of the change focused on translating the message from English to Chinese. Seldom did people talk about this. But we did. We contributed heavily to Chinese computers with transparency thinking, because we had learned some lessons with MicroProfessor II, IMB PC and their compatibility.

At the early stage, Acer kept pursuing being in the lead and progress. Thus there was this image of Acer that our products are weaker in compatibility because we wanted to be even better than the original, back in the 80's consumers could not understand why we did not just get everything like the original one? So compatibility is truly critical.

Ling-Fei Lin: You said that translation for applications from English to Chinese can make Chinese computers run smoothly. What are some other possible methods that other companies tried to employ?

Stan Shih: They developed all the applications in operation system for the special purpose of Chinese interface.

Ling-Fei Lin: They designed it for the purpose of Chinese…

Stan Shih: To rethink the design for Chinese users. The very first Tien-Lung made a hit, but the sales performance was zero, because we had the computer but lacked the application software.

Ling-Fei Lin: Why didn't you think of this in advance?

Stan Shih: I cannot think of an answer to why that is. We just neglected this part. Experiences helped us accumulate our knowledge. We didn't think too much but simply focused on reaching our goal. IBM didn't have the application software and neither did Wang. And lots of professors studied Chinese computer. They did not think of this issue as either. As for us, we learned from the lessons.

Ling-Fei Lin: Would you please talk about how Acer went in the direction of OEM? How did it start to do mass production…

Stan Shih: In 1983 we launched our own brand. And we had some media exposure worldwide at that time. Some companies wanted to do PC business, but lacked R&D or manufacturing skills. They requested our help. Thus, the first batch of orders came from non-mainstream companies like ADDS, which later became NCR. They asked for our help. Afterwards, we revised one of our designs to meet their demands, and then mass-produce the product.

Ling-Fei Lin: The original design belongs to Acer?

Stan Shih: Yes, it was designed by Acer. Based on our design, we adjusted the product to meet their demands, which were market-dependent. For example, like the IO851, when they tested and predicted possible sales performance, some weakness came out. So we redesigned the product. In other words we had to match up market needs. The company sold the product in the U.S., we produced it in accordance with the standard, and requirement of our customers.

Ling-Fei Lin: It was also produced by Acer?

Stan Shih: Of course it was.

Ling-Fei Lin: You were able to deal with this field at that time?

Stan Shih: Yes we were. Step by step, we had already started the specialty in this field.

Ling-Fei Lin: What stimulated you to start doing manufacturing? Since MicroProfessor I...

Stan Shih: We gradually developed No.1 and No.2. In fact, at the early stage, we asked other professionals like Chi Yeh Electronics to OEM our products like MicroProfessor II. In the beginning we

designed by ourselves. And looked for talents to do OEM. And then we looked for people to manufacture for us. Thus accumulated the ability to… We set up the capability to produce small amounts of various products, which was opposite to the other firms in Taiwan. Since we had so many products, we developed our manufacturing capability little by little, from small amounts of various products.

When it comes to the big volume demands, it began with MicroProfessor I. At the same time, David S. Lee's Qume Corporation (the printer company) was acquired by ITT. He became the V.P. and Director of Computer & Information Products. He also had a great interest in entering the PC market, which would be quite big. His company already had a factory in the Science Park with their own design. ITT decided to enlist Taiwan's help with OEM and Lee asked me and MiTAC to do it for them. Since Acer had already gotten the OEM order from ADDS, ITT did not want to see similar situations. So we established BenQ [originally called Continental Systems Inc., later became Acer Peripherals Inc., After 2000 it changed the company name to BenQ].

To discuss things further in 1983, Minister LiTe Hsu and I went to the U.S. to investigate how venture companies work. We wanted to introduce this business model to Taiwan. I made a report to Chih–Hao Yin about what I had seen in the U.S. He said he was interested and wanted to invest. Therefore, we established Hung-Ta Venture Capital Corporation. This was the first venture capital company in Taiwan. Meanwhile, in order to receive the order from ITT, we had to found a new company that did manufacturing specifically for them. But we lacked the capital, so we asked for capital from Mr. Yin. His Continental Engineering Corp. opened their purse to establish BenQ. Afterwards, since Acer was the real manager, we exchanged listings and he invested money. And since our company was a big scale company, the majority of money was changed into equities of Acer. When BenQ was founded, it was a similar situation. Because of his big investments, Yin got more and more equities at that time. With the assistance of Yin, BenQ did OEM exclusively for ITT. I clearly remember that the decision of recruiting. Cheng-Tang Chen, who was very professional, to lead BenQ was so right, he was truly efficient. I must say that he did way better than Acer did.

Ling-Fei Lin: Where was him before he held a post in BenQ?

Stan Shih: In fact he worked for Zenith in Taiwan and then he went to Hong Kong and worked as General Manager in an electronics enterprise. Before 1997, people were anxious about the transfer of sovereignty of Hong Kong from the United Kingdom to China. I invited him to take charge of Hung-Ta Venture Capital Corporation. So that's what he did when he first came back in 1984. Then a while after BenQ was established, I asked him to go and manage BenQ, since he was professional and outstanding in manufacturing. He did a wonderful job and set the foundation for BenQ in the aspect of manufacturing, and BenQ was able to earn a fortune because of that.

Ling-Fei Lin: When did you get the ADDS OEM order?

Stan Shih: Around the end of 1983 or the beginning of 1984. Actually before making the PC, we had already promoted our CPM microcomputers on the market. Plus MicroProfessor I, II, and III, we gradually turned on our brand awareness.

Ling-Fei Lin: You did the microcomputers by yourselves?

Stan Shih: For CPM, yes, we did.

Ling-Fei Lin: Was that also made by Acer?

Stan Shih: Yes, it was.

Ling-Fei Lin: How was the volume of orders from ADDS, annually?

Stan Shih: I really cannot recall.

Ling-Fei Lin: A big number?

Stan Shih: It wasn't small but, on the other hand, ADDS targeted the U.S. market. But we still tried hard to promote the products in places other than the U.S. In 1984, Chih–Hao Yin his wife, and I brought them to the Southeast Asia to have a road trade show. We exhibited MicroProfessor I, II, and III, which were called MicroProfessor PC in several major cities. Although trade shows in 1984 were not common, they drew the U.S. media's attention. It also helped us to build a great foundation. The reason we targeted the Southeast Asian market was that our product exactly met their demands, such as fine quality and inexpensive prices unlike the U.S. because the market was still too small [for U.S. companies]. They did not… That's why we paid much attention to operating [in the] market over there. We exploited the business with local dealers, giving them support to the best of our ability. It turned out great.

Ling-Fei Lin: The order from which company influenced more on Acer's ability to mass produce, ADDS or ITT? Because you mentioned that BenQ did better than Acer in mass production.

Stan Shih: Yes, BenQ had a large volume for OEM. We kept helping them and Acer …

Ling-Fei Lin: Did Acer and BenQ work closely or did they have separate directions?

Stan Shih: These are two separate companies. The only shared part between them was stockholders and equities.

Ling-Fei Lin: All the staffs worked together tightly?

Stan Shih: Every staff member of BenQ worked for Acer before the company was established. They all went from Acer. Including J.T. Wang, he was also at BenQ.

Ling-Fei Lin: You regarded BenQ as a cornerstone to OEM?

Stan Shih: Actually, the sales department didn't do well. The whole sales performance was in recession, so we closed the department eventually. Prior to this, BenQ had to find some alternatives. Thus, Acer handed over the keyboard, and monitor manufacturing to BenQ. That's why it was called Acer Peripherals Inc. When color monitors were about to thrive, BenQ licensed the technology for that technique.

Ling-Fei Lin: What do you think about the role the government of Taiwan played in the overall history of computer technology? Everyone recognizes that the government played a crucial role in the semiconductor field, what about in the field of computers?

Stan Shih: Taiwan's government did contribute in developing the PC. However, the contribution is relatively little, compared with what it did for the semiconductor industry. We may point out that, without Acer, ITRI probably could not have made it with PC production. Because they still needed people beneath them to handle the rest after products were manufactured.

Still another case can illustrate this point of view. At the time when laptops were about to be developed, ITRI also wanted to contribute their efforts. They gathered more than 40 trading firms, small companies, to develop a union for laptop manufacturing . They had no original design and all made copies. ITRI kept calling me, [trying to] persuade me to join in. Of course I rejected that idea. I could not tolerate them plagiarizing or copying Acer's innovations. It would ruin our brand image if they all claimed their products were similar to ours. Afterwards, as you can imagine, that project didn't go well. Therefore, with information technology products, Taiwan's government did some personnel training, but it could have

done better.

Ling-Fei Lin: Back to the big OEM orders you mentioned, like NCR, ITT, what was next? That is to say, I know IBM placed their orders as well; would you like to talk about it?

Stan Shih: Apple, IBM, and Dell. There were so many big firms that would like to place their OEM orders to big companies. Acer was a pioneer compared with [ODMs] Quanta, Compal, and Inventec. That's why those big international firms chose Acer. Since we have our own brand products, they blamed us for their bad sales performance. This caused complications when they placed new OEM orders. Whenever IBM or Dell was hesitating on this issue, I had no choice but to communicate with their management level. Having our own brand while doing OEM could actually bring a win-win situation, because of our scale, that is what I told them. I also promised that the intellectual properties, and trade secrets were absolutely under protection. Also, we would put them on our priority list, with rational arrangements when products are out of stock. I did my best to persuade them. For example, I've talked to Michael Dell about this. He placed the order reluctantly at the time. However, the next time …

Ling-Fei Lin: When did it happen?

Stan Shih: It was around the 90's.

Ling-Fei Lin: You mentioned that at the beginning, relatively small companies placed their OEM orders to Acer. Big enterprises like Apple, IBM, and Dell showed after. So at about what time did these big firms seek cooperation with Acer?

Stan Shih: In the 90's, after "Change Management for New Acer" project, our firm became stronger. Our abilities attracted people's attention. They sought assistance from Acer since they witnessed our outstanding performance. ITT and BenQ was the one exception. David Lee made his decision without considering why he chose Taiwan [MiTAC] . Fortunately, he learned that Acer already had a firm basis, and that our basis was stronger than that of MiTAC, because they did not have the experiences of export trade in considerable quantities, but we did, since 1981. This was our strength when we were shooting for that OEM order in 1984.

Ling-Fei Lin: Mr. Shih, please point out at what time did Apple and IBM come to Acer for OEM production?

Stan Shih: It was around the middle of the 90's. We had "Change Management for New Acer" project in 1992. After that, we extended our business map with great momentum, we already thought about potential OEM opportunities in Europe around 1987 and 1988. Besides our own brand, we had a team traveling around for OEM business. Actually, we did OEM for lots of Japanese brands. Around middle of the 90's, IBM came to us first, and then Apple. The next one was Dell. When we did OEM for Apple, we expressed tons of problems to Apple due to its product uniqueness. Because their products were distinctive, we needed more lead time to ensure the quality. Inventory management was another challenge as a result of [Apple's requirement for] expensive and non-standard products. We kept them informed of the overall situation. Later on I went to Austin, Texas, for a similar strategic interpretation for Dell as well.

Ling-Fei Lin: Who was on the initiative with this business? Apple, IBM and Dell cases?

Stan Shih: Let's say that we kept approaching them for cooperation. Yes. We even approached HP for possible trade. Since we had our own powerful and competitive brand that we did not want to give up, they had scruples about doing OEM [business] with us. My thoughts of the specific ratio of OEM and our own brand were fifty-fifty. If the ratio went to 7:3, we had to work harder. We aimed to reach and maintain a ratio of 5:5. I communicated incessantly with my associates [employees] on this issue. We regarded this

as a great strategy for long-term development. It was true then, but reality taught us that it was a dead end. This strategy led to decentralized works. We could not manage our brand without concerns. Once our own brand stands out we have to expand more OEM customers to strike the balance. And when the OEM business was booming, we had to expand our own brand, which our customers did not like. This strategy not merely affected OEM customers' reception of Acer, but also created internal conflicts at the managerial level. Details are elaborated in [my book] "Millennium Transformation".

Around this time, OEM-oriented companies like Quanta and Compal arose. Also, companies targeted at EMS Plus such as Foxconn were presented EMS Plus brought relatively increasing volume. The trend of Electronics Manufacturing Service (EMS) Plus mode was initiated. On the contrary, Acer's main customers like IBM and Apple didn't have splendid performance at the time. Thus, our OEM volume ceased progressing. Therefore the OEM-oriented companies surpassed us. The true reason why Acer spun off manufacturing and R&D to Wistron [in 2000] was that the original structure was running off on competitiveness. Therefore, dividing the company into two- OEM and our own brand was the only way. Although it was tough at first, it was the right decision for Acer in the long run for it eventually got its competitiveness back.

Ling-Fei Lin: Would you like to talk about your collaboration with IBM, since their order weighed heavily in your OEM business? Was there anything special?

Stan Shih: Actually, we built up our cooperating relationship through OEM. We were one of IBM's VIP clients. When Louis Gerstner took up his post, lots of new and open-minded thinking came out. Acer became their important customer, because we purchased IBM's products like components---DRAMs, and hard drives. Also, because we were IBM's components customer. Our sales team merchandised our services to IBM's PC System Department. That was our way to build up and maintain a good relationship. As a result, I met with Louis Gerstner and he showed me the latest products of IBM's R&D. He told me that those new products would be useless if they are just on display and sold to no one.

As for the panel board of AUO, we discussed a lot with Japanese firms, but in vain. But because we were on good terms with IBM, IBM's headquarters made a decision to do a technology transfer from their IBM-Toshiba joint venture firm from Japan to Taiwan. It is intriguing that the factory transferred technology of the 3rd generation of panel board. Yet, IBM allowed us to devote R&D to the 3.5 generation. From the IBM-Toshiba joint venture company's view, technology transfer for the 3rd generation was enough for all. However, IBM was expecting a leading position. That's why we started with the 3.5 generation. With this in mind, AUO took a lead in the arena of panel boards. All of the above came from the good relationship between Acer and IBM.

Ling-Fei Lin: That is to say, Acer bought a great amount of components from IBM? And then, they placed PC system OEM orders to Acer? Other collaborations followed the aforesaid?

Stan Shih: I cannot recall which one was absolutely the very first one.

Ling-Fei Lin: Weren't the orders from IBM really important ones to you?

Stan Shih: I really don't recall who ordered how much and exactly what percentage of our business was taken up by IBM at that time. I don't really pay that much attention to this kind of stuff, although, of course, everyone else does…

Ling-Fei Lin: People regard IBM as one of the key factors to Acer's growth.

Stan Shih: Yes, for a period of time.

Ling-Fei Lin: When did you change the company's name from Multitech to Acer? When did you start to

brand Acer world-wide? In the early stage, it was rare to market a computer brand or to manufacture electronic products for consumer use. How did you find the way out and carry out the strategies?

Stan Shih: We had done export trade since 1981. Everything went well until 1985. In 1986, with Long Tung and Long Meng, we made up our mind to penetrate the global market in a big way. However, we ran into many "Multitechs" at that time. There was one in the U.S. manufacturing modems. They asked us to rename our company or they would sue us. There were Multitechs in Germany and the Netherlands as well. There were actually Multitechs everywhere. So we were forced to rename our firm. In 1987 we initiated the renaming program. On the way we flew here and there visiting OEM clients, like Siemens, Nokia, Ericsson, Philips, and Bull to promote our OEM business. We racked our brain to create our unique name. Finally, we came up with a way of using computers to randomly choose 4 or 5 letters with two syllables. Thousands of choices came up, then we picked the ones we liked. Then the legal department went to check the registration and realized none of them could be used. The due date the American Multitech set was approaching. So we turned to Ogilvy & Mather to come out with a short list [of possible names] for us. Their Australian artistic director found a word, Acer. In Latin "acer" refers to energetic. You can imagine how we all liked it very much. It is also intriguing that decoding this word in English, you may see it's "ace" plus "r", "ace people". We decided to use it right away. And after a legal search this name was approved. Afterwards, the director recommended us an Australian designer for logo design. Everything got ready all of a sudden.

Ling-Fei Lin: You mentioned that Acer started its export business in 1981, but did not brand the brand image until 1986. Besides the name of the firm, what were the differences in the company strategies between these two phases?

Stan Shih: The main factor was that we had come to fully understand our product line, which improved our export opportunities. In 1986, we found out the name was in order to recruit because we did not have adequate ability nor talents [personnel]. That's why we recruited many experienced people, including Vice Minister Hu Tung of the Science Park, Chuan-Cheng Wu, and Yiu-Lung Hei. They all joined at that time because we thought there was room for improvement. Such a big opportunity, but the young people we had were not sufficiently experienced nor trained. So we found some experienced people to help. In 1989, Acer engaged Ying-Wu Liu as General Manager. That movement showed our great ambition to seize the chance even before entering the market.

Ling-Fei Lin: You meant that at that time, the whole company was moving on with great momentum?

Stan Shih: But with a lack of manpower and talent.

Ling-Fei Lin: In which aspect did those recruits contribute in gaining momentum for your own brand…?

Stan Shih: Having our own brand is the strength of Acer. BenQ was good at OEM. Acer focused more on our own brand then. Later on, there came the OEM business boom. BenQ turned into a proactive role on winning over OEM orders. And it relied on Acer in the early active stages. Going back to the beginning, we launched 32 bit PCs in 1986. It was even earlier than IBM did. At that time, our brand name became very famous worldwide. Using this fame, we promoted our own products too. One of our great helpers, Unisys who enabled us to promote such high-end computers is not as well-known as it was. Unisys was the 2nd largest computer firm in the U.S. and was one of our earliest customers. Also, Unisys assisted Acer with launching the 32 bit PC, a relatively high-end product. They mainly bought PCs from us. In 1986, because of IBM's PC its 32 bit PC came out. Techniques can prove our capacity on our products and design. Acer's capability to design and manufacture was at the same level as XT and AT. Both IBM and Acer used the same memory to make the product. Except 32 bit PC, although we always released our products a bit later than IBM's, the quality was under our guarantee. Of course later than Compaq…

Ling-Fei Lin: Did Jonney Shih take charge of the project?

Stan Shih: Yes. There's a story you might know. Prior to 32 bit PC project, Jonney Shih led the team. We had invested in Suntech in the U.S. At that time Shih Ke-chiang of Suntech started a project using Motorola 68000 CPU to design a workstation. As soon as we invested in the project, the money ran out very fast. Thus, we sent a team there to work on cost reduction, and to learn the techniques in the U.S. at the same time. This team, of course, picked up the structure of 32 bit computer. This became the basis of our 32 bit PC. Since there was no 32 bit chipset in 1986 yet, we used tons of discrete ICs to compose a circuit. That was way more challenging than present techniques. So it was that group of people. But later, most of the group switched to motherboard field, because that's what they were good at.

Ling-Fei Lin: Who else was there except Jonney Shih?

Stan Shih: Han-ching Chen and other engineers. I do not know, I have forgotten. I only know these two there should be some. Some of them went to ASUSTeK and Elite.

Ling-Fei Lin: They did motherboards based on this experience?

Stan Shih: Motherboards are one of the leading parts of the computer industry. In that project what they learned was 68000, the so-called workstation which was more powerful than PC.

Ling-Fei Lin: You mentioned the 32 bit PC earlier. Was your firm or Compaq the first one to launch the product?

Stan Shih: Compaq was the very first one. We launched ours right after they did theirs.

Ling-Fei Lin: You were faster [to market] than IBM?

Stan Shih: Yes. The target we hit was "overtake IBM".

Ling-Fei Lin: Since 1986, you recruited lots of experienced talents from many different areas to serve as your personnel at management level, greatly expanding the personnel roster. It seems like many people couldn't adapt to the changes and quit at that time.

Stan Shih: People started leaving in 1988 after the company became listed. There were two main reasons for people to leave the company: one was that after we become a publicly listed company, they had money. Many other companies started to recruit our employees, or ask them to start new business ventures. This was the external reason. On the other hand when new leaders came in as management, our management culture became less centralized, and also the company itself had limited room for growth, leading to a feeling of helplessness among the managers. That's why they left Acer. That situation began in 1989. We did lose lots of great employees.

Ling-Fei Lin: Why did you recruit managers, directors, outside of the company then? Didn't you think you had a great team already?

Stan Shih: We did not have enough and they were not… Acer had a good team but this was not enough. I also thought of myself as not capable enough. That's why I invited Ying-Wu Liu to come. It meant he could lead us. Indeed, these new talents brought a lot of new thinking, practices, and mechanisms to Acer Because of them. Acer became more professional and systematic. This is really different from our original mentality. We started from scratch, so the culture was different. We had always had the energy and diligence. But in order to have a system there needed to be a strong discipline, which is why many employees were not used to it. Also the decision-making process was inevitably slowed down. Associates [employees] were used to the old style. So it was hard to avoid the sense of being impotent to do things.

Ling-Fei Lin: You recruited people from large foreign-based companies?

Stan Shih: Yes.

Ling-Fei Lin: Why? You were expecting them to bring their expertise into your company?

Stan Shih: Not exactly. Since they had worked for big international firms, they had a broader view toward the international market. [This was important since we wanted to call ourselves Lung Tung (Soaring Dragons) International. We couldn't remain as local dragons, Acer needed them to establish our international vision. From another point of view, Ying-Wu Liu admired our team members such as Johnny Shih, K.Y. Lee, J.T. Wang and Simon Lin. They all saw new things and learned in that environment. Liu admired their capacities. Liu managed this company with high-pressure model. Although everybody was not exactly used to that model, I'm sure everyone learned something new and positive. To be objective, the whole [industry] environment changed a lot during that period. Even IBM ran into some problems at that time. The pressure of the whole industry was high and tense. In that kind of difficult situation these people, at least, didn't need to be responsible for all those difficulties. Otherwise, they might not be as successful as they are today.

Ling-Fei Lin: Was Ying-Wu Liu a scapegoat?

Stan Shih: We should think about this from different angles. On one hand our team could learn new things. On the other hand team members didn't worry about, who was responsible if sales were unsatisfactory.

Ling-Fei Lin: Do you still think it was a right decision to introduce these talents [people] from other companies?

Stan Shih: I think that is inevitable during the process of development. I cannot tell what Acer would be if we erased this from our history. Maybe the framework would be different. Maybe the vision would be different. I just cannot say what's right or what's wrong.

Ling-Fei Lin: Losing those talents, did you not feel depressed?

Stan Shih: All I could do was to face it. In fact, I felt that because of the overall [industry] environment. Letting them go was probably beneficial to both sides, since they were mature enough to face new challenges.

Ling-Fei Lin: Would you like to talk about these partners like Jonney Shih or K.Y. Lee, whom you worked with in Acer? Was there anything that impressed you a lot? Let's say about Jonney Shih? You admired his talents and that was why you assigned him as director of R&D?

Stan Shih: He was more than a talent to Acer. He was the editorial writer of our publication, "The Words of the Gardener". He worked for Acer as soon as he graduated from graduate school.

Ling-Fei Lin: Were you the interviewer when he applied for this job?

Stan Shih: Dr. Lung-Ying Chen recommended Jonney Shih to Acer. Shih is really easy-going and capable. He is very intelligent, much more intelligent than I am. And he always bears hardship without complaining. That's why I let Shih lead the team to develop products---from MicroProfessor No.1, No.2 --- to even a learning team to the U.S. He has the talent of leadership. Chia-Ho Lin executed R&D, he took a hands-off attitude toward management. So people under him had the chance to put their talents and capabilities to full play. The team worked hard night and day. Shih even got a gastric hemorrhage. He was always diligent in working. He had always had outstanding performance, especially in 1986, he and

his team leveled-up Acer to a world class company.

One quality of Acer is that we keep growing, and our talents [personnel] got promotions with the growth. This promotion pattern applied to everyone. It was only slowed down a bit when we began to recruit people from other companies, [but] we asked for everyone's opinion about this. Even Ying-Wu Liu was interviewed by our associates. We hired him after all of our associates said yes. That's why I mentioned that we took our experiences into consideration before we made the decision. The decision was an agreed upon view [of all]. It was just that the conditions did not allow us achieve our common goal.

Back to Jonney, he is a person who does not scramble for fame or fortune. In my opinion, there were a few reasons for his leaving Acer. Besides that, his subordinates like Tzu-Hsien Tung, asked him to join their newly established company. I think it was more or less because of his gentle temperament of not fighting over fame. That period was also difficult. And he maintained a good relationship with Simon Lin, so they didn't dispute over power. However, associates working for them might have disputes over performance. This made it quite difficult for their supervisors. So he said he might as well just leave too. In the end, he made up his mind to leave the company. A year before he left the post, I got the news, maybe someone else on the outside such as someone from ASUSTeK also knew about this. However I asked him to spend a year in the U.S. so that Simon Lin could have time to smooth over the personnel discords.

Ling-Fei Lin: Who did you request to stay in the U.S. for a year?

Stan Shih: Jonney Shih. He pursued further education there. He made the decision before he went there.

Ling-Fei Lin: He was still an employee of Acer at that time?

Stan Shih: We did this in hope of not stirring everyone's mood in the office, because his departure could be influential to all associates [employees].

Ling-Fei Lin: What was the thing that Jonney's and Simon's team argued about?

Stan Shih: Jonney and Simon didn't fight for anything, but some of their subordinators did. They fought for better performance, for resources and the like.

Ling-Fei Lin: What were the two departments they led separately?

Stan Shih: One led the System Division, the other led the PC Division, if my memory serves me right.

Ling-Fei Lin: The two divisions seemed alike.

Stan Shih: Both of these two divisions …

Ling-Fei Lin: Are System Division and PC Division alike?

Stan Shih: The System Division is in charge of the higher level of techniques, such as servers, Internet and the like.

Ling-Fei Lin: Was it the division Jonney led?

Stan Shih: His division took charge of desktop products.

Ling-Fei Lin: How about Simon? K.Y.? And J.T. Wang?

Stan Shih: K.Y. was already an outsider of Acer at that time. He worked in BenQ after he got back from

the International Institute of Management Development (IMD).

Ling-Fei Lin: Would you like to talk more about them, your successors?

Stan Shih: K.Y. went to IMD to pursue his master's degree, because he did not like the way the company functioned. Then, I went to Switzerland to have a talk with him. At that time BenQ was slowly growing bigger. But he left so I told him---It was in 199.. that I wanted to transfer J.T. Wang of BenQ to… No, I had already transferred him to ASM. So I had Chu-Shen Liang to oversee BenQ. Then I asked K.Y. to come back to BenQ as general manager, he had a fairly good development in BenQ. As for J.T. Wang, he was transferred from BenQ to Hung-Ke as their general manager. Because the manager of Hung-Ke was Kenneth (Chung-He) Tai. But Kenneth Tai volunteered to transfer to the U.S. So he left and the post of Manager of Hung-Ke was taken by J.T. Wang. That's about it.

Ling-Fei Lin: Could you please talk about when your products like PC got into the global market? And what were the challenges and obstacles the firm went through?

Stan Shih: In 1984, we were just an unknown international brand. We were already internationalized since 1984 because we had the foundation of Micro Professor No.2 and No.3. So when the [Acer] PC came out, the dealers we cooperated with world-wide were relatively too weak to make a hit in their local markets. So we needed stronger dealers. So when the products came out, Acer already had a global network. Thus, when our 32 bit PC came out in 1986, Acer was even stronger. We took our advanced products to be in the head of the market around half a year. During this time, we successfully expanded the market.

Ling-Fei Lin: So you were able to find some excellent dealers then, right?

Stan Shih: Yes, we gradually found some. But by 199… But afterwards, we had good outcome in the European market as well. However, the more we grew, the more risky it was to our local dealers. Hence the dealers in Europe required Acer to establish a company over there and store our goods there…also to deliver our products locally instead of delivering goods to them from Taiwan. If we shipped from Taiwan after a month or so, it's too risky to ensure all the products and demands could be matched. The bigger our business became, the more difficult it was for dealers to bear the risks. Although they had the ability, too many risks were involved financially. There had always been this need. That's why we established a branch in Europe in 1986 in Dusseldorf.

Ling-Fei Lin: Could you please indicate the great difficulties you ran into when you managed the brand image?

Stan Shih: Everything went well in Southeast Asia, Latin America. We also did well in small European and Northern European countries, so it was good in Europe. In the U.S., however we have always had challenges. The reason is more or less related to the fact that brand competition is a localized competition. There are no computer companies in South East Asia nor are there any in Latin America. In Northern Europe or Europe there were companies, but there was not much competition and there were no companies left in the end. But there are tons of computer companies in the US. so we could not win the fight. We also ran into the same circumstances when we were trying to extend the map to China. China also had a lot of local companies and brands. Under such circumstances we had several revolutions for making the sales performance better and better.

Only recently did we gradually become one of the top 3 or 5 brands in the U.S. and China by changing our model. Otherwise, we used to be outside of the top 10 list. And we used to not earn money. During the worst time in early 1990s, our losses in the States would bring the whole group into red. Since if we lost a little money in one area of the U.S., the whole corporation would lose a substantial amount of money.

Ling-Fei Lin: How great was the amount of loss?

Stan Shih: I'm not sure... Acer must have lost over 100 million dollars since it became a listed company. It was big news for Acer because it had never happened before. We lost even more in the U.S. market.

Ling-Fei Lin: Now let us talk about laptop, for it became one of Acer's main products later on. And Acer is ranked among the top three laptop brands in the world. Do you know why Taiwanese companies can be so competitive in the area of laptops? In particular, for laptops, the ODM has over 90% market share in the world. Why do desktops and other products not have this kind of highly intensive market share?

Stan Shih: In fact, Taiwan plays an important role in the history of desktop computers. Desktop can be produced everywhere. However, Taiwan still owns a high market share in the field of motherboards, since we had fine and high quality motherboards. That's why Intel tried to carve up the market as well. Intel wished that as soon as new CPUs and chipsets are introduced, the whole market can be turned on. And they wanted higher turnover rates in the market. IBM and Compaq considered this, too. In the end, they supported and purchased ASUS' motherboard. This drove the whole desktop industry to keep replacing.

Acer focused more on desktops. As for laptops, in fact, Acer was behind when entering the field. It was not easy to develop notebooks, while the entire company was pushing desktops forward. It was not called the notebook at that time. But with laptops, we had to overcome the lack of manpower. And the market was not that big at first. The priority was therefore insufficient and we failed to grasp the point. Afterwards, I tried to gather another group of people to sett up an independent division for laptops. Lin Chia-ho was in charge of the management and so forth for that.

At the same time Quanta targeted laptops as well, since they had the foundation and experience of making smaller products such as calculators. The desktop was driven by the motherboard. Quanta knew they could not win in desktop. So they focused on laptops earlier than Acer did. Actually, Acer did OEM laptops for Quanta. Of course we did not have a full concept at that time. But we still wanted to manufacture and brand our own laptops. Thus, gradually, we picked up everything. It was only through our OEM for IBM and Apple that we built up the functions of the notebook. I cannot recall every detail clearly. But we had a certain volume at the beginning. Most of the volume was due to desktops.

Ling-Fei Lin: So could we say that motherboard-oriented companies were doing a better job with desktops than Acer?

Stan Shih: Yes.

Ling-Fei Lin: Was the start a crucial point here? Because the motherboard companies took the initiative?

Stan Shih: Yes, we started it too late.

Ling-Fei Lin: And now we have some comprehensive questions. We know that you did both OEM and ODM before the firm was divided into different companies. As an OEM producer, what were your role and feelings? And the next question is on the difficulties and thoughts as a brand producer.

Stan Shih: The most important thing for a company is the value. The value that we provided for our OEM clients in the earlier stages was our techniques. Because of our scale, they can depend on our existing foundation. With our fine techniques, and lower cost, we are very competitive to do OEM for them. In order to do OEM you must have a certain [level of] competitiveness. On the other hand, managing our own brand is basically the same. You have to be in the lead technically. You also have to take economies of scale into consideration and have someone to share the cost of manufacturing with us and to expand our scale together. Both are very good for our own brand. However, then the two sides clashed.

The conflicts didn't come from brand and customers, but from the different styles of internal management. The OEM division had to listen to the brand division. On the other hand our own brand had lots of demands. And the company had to cooperate. But then the rate of return on the investment did not seem enough. Because we invested a lot of resources into our brand without sufficient returns. So people in the OEM division thought it was not rewarding enough. And the brand division thought that support from our own company was inadequate. Subsequently, the only way to solve this plight was by dividing the company.

Ling-Fei Lin: What do you think about OEM-only companies like Quanta?

Stan Shih: If you establish an OEM-only company, you must unceasingly create value in technology and scope and outperform your competitors. Moreover, your client book must be multidimensional—if every type of client seeks your company to do its OEM work, then OEM can be a good industry to be in. If you only depend on one customer, then that cannot be good for [the business]. If there is any problem with it, then you are in trouble. Or your value would not be able to be judged fairly. If you have only one client then there is no fair price, for there is no market. Therefore I think in OEM, you must keep creating value. To view this issue on the other side, if everyone's on the same level with value, no one is superior to any others in this aspect. The competition would then focus on price and margin only. In Taiwan, more and more, the OEM-only companies have their own value. Take Wistron for example, they now have the ability to choose. They have created their value so without reasonable compensation they would not take the business but would leave it to other companies. But gradually more firms would feel that it is not worth it, so no one would take "bad" business. It is natural for buyers to want to bargain. But when the price it too low, then no one would do it. Then you have to raise the price a little bit. Eventually the price and value for the whole OEM market would come up. And that's the way it is. Such is the ecology of the business.

Ling-Fei Lin: If you had the chance to start it all over again, would you still choose to do both OEM and ODM?

Stan Shih: Because the scale was too big, so we had to divide the company. If you do not have mature technology and new brands, the brand (product) and manufacturing are one. Then if someone comes and asks for you to do OEM……it used to be… it is different today, it depends. Because, if I were to take OEM business, there would be managerial problems. If the company size was large enough and its ability strong, such as Sony was back then, when they decided not to do OEM for RCA, but concentrated on their own brand instead. Also, the Japanese market was big enough [to sustain its business]. And they had enough capability, so they made up their mind to focus on their own brand. As to Taiwan…

Ling-Fei Lin: Sony refused to do OEM for RCA on what products? PCs?

Stan Shih: To do OEM transistors and radios, RCA placed a very big order. Sony pondered on this overnight. The next morning Sony decided not to do it. Only when they are focused can they do a good job. But Acer had to take both simultaneously. if our own brand was strong enough to sustain the entire company, then we would quit OEM. Until the company was capable and mature enough to be fully independent, we could not divide OEM and our own brand into different branches. And the ecology of the market accepts our way of doing things…to be a respectable competitor to big firms like HP and Dell. Moreover, OEM-oriented companies like Wistron, Quanta, and Compal, also supported us to compete with their OEM clients. The competition became intense, but the ecology is sturdy. The pressure became larger to all the industry. The ultimate beneficiaries [of this competition] are the consumers.

Ling-Fei Lin: You mentioned Sony's decision on ODM. However, you don't think that was possible for Acer to do the same thing?

Stan Shih: That was impossible for Acer. We didn't have such capacity.

Ling-Fei Lin: Why? Because Sony a Japanese enterprise?

Stan Shih: Japan has a large market. The main thing is resources. Our talents nowadays…If we look at this from another point of view, of course, with our present talents [personnel] and techniques. The pan-Chinese people can operate purely their brands. But it is very important to have leading techniques. Leading in what? In scale. Without a big enough scale you cannot lead in techniques.

Ling-Fei Lin: Switzerland and Italy also have small domestic markets. But they do have …

Stan Shih: Pan-Europe is a large market. That is why I said Asia also has a large market. Years ago, the big market in Asia was the Japanese market. With all objective factors in mind and the big Asian market now, Chinese people can reach the goal to become ODM-only now.

Ling-Fei Lin: Would you like to define the "Smile Curve?" What stimulated you to have this kind of concept?

Stan Shih: In 1992, Acer was initiating a program for revolution. I analyzed the "value-add" imparted by each segment of the entire industry, from upstream components to the middle reaches like computer, and downstream such as approaches and branding. I analyzed the upstream components from software operating system to CPU, and DRAM, Floppy Disk Drive (FDD), Hard Disk Drive (HDD) to motherboard and the like. That's what I did. And as I drew the curve of the value added that I analyzed, it turned out to result in a smile-shaped curve. We regarded the computer industry as the most valuable one. However, this curve showed external variables affect the value greatly. The curve showed manufacturing is the lowest in terms of value. The middle part of the curve was pressed lower.

The reason why I studied this and used it as a tool to communicate was mainly political. I wanted to prove that the fact that people thought relocations from Taiwan to overseas foothold would cause heightened unemployment rate [at home] was wrong. What is "potential unemployment"? I wanted to move the assembling work, which is of no value added to the market, because it was more competitive. To assemble desktops in the market, they had new techniques and lower cost because the motherboard had already launched. That's what I proposed to all [Acer] associates [employees], that I wanted to do the assembling in local markets. Like what other brands did and we could do motherboards at the same time. We could also make keyboards monitors and so on. We could also sell our components overseas to be assembled. I communicated with my employees and told them that I did not move any value added overseas. And your work has to be gradually moved to that with more value added because we would be making a lot more motherboards and components. The fact demonstrated that everyone got surprisingly business volume. The increase in business volume was about 50% more per year. That's the background of "Smile Curve."

In order to simplify the curve, I illustrated the middle part as manufacturing. The left side as research and development. And the right hand side refers to brand management and service. I also proposed that the left hand side of the curve means global competition. We had to compete globally when it comes to components and motherboards. And we had to have global scale in this aspect, the right hand side is local competition and local competition, included the assembling in the middle. I used the fast food business model as a paradigm. We assemble brand-new computers for our customers locally. They are cheap and fresh---this was with desktops then. Because of this situation, the efficiency and scale of R&D and manufacturing were remarkably improved. The competition of brand marketing became better on cost and freshness because of the local assembling. So there was a great peak of growth in the business. However, you cannot impose this mechanism on laptop development. The laptop is small enough to be transported by air. Moreover, to assemble a laptop is not as easy as assembling a desktop. Standard production and assembling are needed for laptops.

Ling-Fei Lin: Would you like to talk about some failure? For example, how did you deal with unsuccessful mergers and acquisitions?

Stan Shih: In fact, failure is … When about it comes to mergers and acquisitions, we should point out the successful one first. The "Four in One" derived from a merger; we acquired the companies we had relations with [laughs]. We did this successfully domestically. On the contrary we failed when we sought mergers and acquisitions overseas. In the U.S. we had several cases of this; for example, we sought to acquire a company for "service intelligen[ce]" in servicing our products after the completion of a sale. We thought that after sale service was extremely important in the U.S., so we spent half a million dollars to acquire a small firm in LA. We entrusted the firm with a very important task, to be our back-up in the U.S. in the 90s when we were trying to expand our business map in the U.S. However, we found out that their capacity was truly limited. They could not scale their service to support our business growth. A complete network of after sale service was chaotic. Qualitron had similar problems too…that spare parts were sent out to customers without payments since the management of the process was poor. People refused to pay the bill. Ultimately we lost 20 million dollars. We put in half a million dollar investment and lost 20 million dollars. We learned a bitter lesson from this.

Ling-Fei Lin: How long did it take? A year?

Stan Shih: We calculated our income and expenses 2 or 3 years later. This business made a loss because of poor management. All those spare parts were gone. We could not receive payment for them. And the inventory management was also a mess. Later on, we merged a firm Counter Point. It did multi-user business. We expected revaluation from the merger at first. In other words, we hoped that we might upgrade on the PC. We also merged their talents [personnel] to apply their techniques to our own operation in the U.S. hoping that our products would level up with this. But it was unsuccessful. Acer bought Altos later and that did not succeed either.

Looking back, the main problems were techniques and talents [personnel]. Unfortunately those talents [personnel] did not have the PC mentality. They expected high margins and low volume, including their access, we needed that too. Altos was one of the firms using microcomputers to develop microcomputers. It made a hit in the early stage. Yet, the PC became mainstream and this company did not do things in the mentality of this business. In fact, our way of thinking was mainstream. But we were not able to convince them to accept our mentality.

Ling-Fei Lin: They didn't do PC from the very beginning.

Stan Shih: Yes. Nevertheless we needed their capacity with experienced and skilled talents. As long as Altos could be persuaded by Acer, the latter would become stronger.

Ling-Fei Lin: What did you expect from them to do for Acer PC?

Stan Shih: We had to step up with the PC mode thinking. Of course we wanted to go upwards, but with PC mentality. For example, the way they did a project was that they did it step by step. They would set a goal as to how much to produce in half a year. They placed the order in the U.S. on how much to produce 6 months later. So half a year later, no matter how the world will have changed, you still have to promise the goods will come in, unlike in Taiwan, where we have the flexibility to adjust. Two or three months of lead time is already considered long in Taiwan. The entire world might change greatly in 6 months. That is the traditional computer culture.

Ling-Fei Lin: PC has already become the mainstream at that time. Why did you choose to develop minicomputers then?

Stan Shih: No, minicomputers were not the direction we were heading to. I wanted to be at the top of PC

servers. I earned some money when we gave our first try in 1986 because we were the front runner in techniques. So we operated in the PC mode. Our mode was big volume and low margins. To have big volume, we needed to keep upgrading our techniques. The firms we engaged had designers we wanted. However, due to cultural differences, they did not acknowledge our PC way of thinking. If they did then all those American companies would not have disappeared.

Ling-Fei Lin: What you planned to do was via PC mode, making high-end products such as PC servers but not minicomputers?

Stan Shih: Exactly. It was not about minicomputers. Yet… Yes. Altos' VAR dealers,for instance. It was the same hardware. The company could be alive by only selling 2 or 3 units of hardware per year, because the mark-up was very high. Actually, the techniques for that hardware and for PC servers were not that different. However, once they positioned the hardware as PC server, they had to sell 30 units per year to reach the same profits, whereas they used to only have to sell 3 per year. But now their customers also…because as soon as we were out there, their business was damaged by us. The ecology was damaged. Thus, they refused to do so. Their capabilities, therefore couldn't be integrated into ours. The cultures from the two sides are completely different. Because of these experiences we finally made it with laptops. Our merging with TI notebooks was definitely…from a long term perspective, we evaluated the decision as a successful one. In the short-term, it was only fair. Before that we had a lot of experiences to understand.

It was the very first time that I had ever heard that a company would pay the buyer money, while selling a department out. I was of course intrigued by this offer and sent out a team to investigate and discuss the merger possibility. At first, they said that they would pay us 30 million dollars for purchasing the department from them. The number I just gave you is just for reference, it's not exact. I sent a group of people, around 20 something persons, to learn about their inventory, accounts receivable and many details, to learn about their actual conditions. We found out that there were problems everywhere. So I told them that it would not work [the way that they had proposed] and that they had to pay us more. Eventually we reluctantly accepted their request with nearly 100 million dollars. It turned out that after media release, that the TI stock rallied vastly. In that case, if TI didn't pay me for selling the department, they couldn't gain those several hundred millions, the hundred billion they paid was gone within 2 years.

Whether in the U.S. or in Asia, the talents [personnel] and money were all gone, because we utilized our own mode to manage the firm. We knew that American mode would not be applicable. We would not be able to beat other American enterprises. In addition, Acer was already a strong company in Asia. When they came in, there was an overlap in the market. But they were not stronger than us, and thus failed in Asia as well. Fortunately, our team in Europe complemented us. They were already doing well there. Plus they could gradually cultivate their team there. During the process, some of the less competent project chiefs in Europe left due to poor performance. Gianfranco Lanci took over and did a wonderful job. So Acer's promotion as a global brand depended on this team. Most importantly, Lanci brought the European mode to U.S., because if we went to America with the American mode, we certainly would have lost. And Lanci won a great victory over the market. As for China, the Taiwan mode would not work since the two are completely different. So our General Manager in China is also European, German. So we also have great performance over the Chinese market.

Ling-Fei Lin: Would you like to talk about why you chose to cooperate with TI when entering DRAM manufacture?

Stan Shih: The PC [business] was flourishing in Taiwan at that time. But there was often a shortage of the key component, the DRAM. The market couldn't develop effectively without the DRAM under control. Moreover, the Taiwanese government kept thinking the semiconductor industry was what Taiwan should work on to achieve this goal of volume DRAMs, which requires advanced manufacturing procedures, and is also quite large. I sensed the opportunity on manufacturing DRAMs, since the quantity demand in

Taiwan would be huge. And I thought we should upgrade the level of semiconductor manufacturing.

Therefore, I started to look for possible business partners like Sharp of Japan, NEC and the like for potential cooperation. No one was interested in my proposal except TI. I realized that TI had been talking to Taiwan Plastics Corp. for years because the culture of TPC is suitable for such capital-intensive high-volume production, they kept discussing the feasible plans with TI. However either TPC or TI would give up the initiative of cooperation. For Acer, we didn't have techniques to guide the project, so we didn't list the initiative as a priority, because we could not lead on the technique. But we needed the market and it was important for Taiwan to build up a semiconductor industry in the long run. So when we started our DRAM tasks, we made the decision. We were already listed, so we had more resources. Later on, we invited China Development to invest in this project. The capital was then solid. Since 1989, when we entered the business, we sensed how strenuous it was because it was a long-term investment. We ran into the period of time when the prices in the PC market were down. Compaq made an announcement one day of a 30% price cut which had never happened before.

Ling-Fei Lin: Did that happen in 1989?

Stan Shih: I am not sure if it was 89 or 90. Anyway there was a huge problem back then. The profit margin was compressed by that price erosion. On the one hand we couldn't make a profit. On the other hand, Acer couldn't stop the investment in TI. These two events resulted in a financial crisis. At the most difficult time, I did two things to reduce the flight of capital. One of them was that I left my long-term investments and sold more of my equity to China Development. One of the other was that I sold a piece of land Acer owned in Longtan. Consequently, we had more flexibility with capital. Later, we sent 200 or 300 people, including technicians, to TI's Miho factory in Japan for half a year of training. I went there several times as well.

When they came back, Cheng-Tang Chen was put in charge of the process of building our own plant. He was very experienced with manufacturing, although he didn't know semiconductors that well. He was definitely responsible for the good groundwork we had from the sanitation of the constructions to defect-free rate. He impressed me with his reasonable and essential requests on everything. Because of him the products and procedures were better than what they had in Japan on defect-free rate and efficiency. Not to mention when compared with factories in Italy or the U.S. it was much better. This factory made a great profit. After "Change Management for New Acer", we started to do mass production the profit we made was even larger.

However, TI Acer ran into some obstacles because TI's technology development fell behind. This situation resulted from TI's strategy. TI was at the top in techniques, however, they were incapable of persuading investors to invest in capital-intensive businesses such as DRAMs. In other words, their investors didn't have confidence with the investment. Around that time Japan slowly surpassed TI. That was also when Intel stopped developing DRAMs, while TI was insisting on this. So TI relied on Taiwan for support on risk assessment. Also, Singaporean and Italian governments took risk assessments too. In the overall structure of this project, Taiwan was the only one that came into the DRAM business by a private enterprise. In the early stage we earned money from it. Yet, techniques fell behind later on since TI's manufacturing and design was no longer competent in the U.S., the company was incapable to move forward. Because the design and manufacturing of DRAMs had to be integrated in order to stay in the lead. So they lagged behind and it was difficult for us too. And we started to lose money.

Ling-Fei Lin: TI didn't have talents [personnel] for design in Taiwan or Singapore?

Stan Shih: They did all the design in the U.S.

Ling-Fei Lin: They integrated their design with local factories…

Stan Shih: No, they didn't, since the factory couldn't catch up with the trends due to lack of investment. Mass production was not feasible for TI's factory. So basically during this process, there were many… because Taiwan was definitely good in manufacturing, but we were not earning money. We always insisted on our own opinion. We spent a lot of time negotiating with TI.

And suddenly we learned that TI was giving up the DRAM business. Hence, I bought all their equities. After I bought them I started the transformation. Because at that time, UMC and TSMC had already transformed to OEM-oriented enterprises that focused on wafer OEMing. I wanted to transform into doing less variety, but bigger volume of wafer OEMing. Do you know what I mean? Wafer OEMing is usually of numerous varieties and small volumes [of each]. But with DRAM, it is the opposite. It was less variety with bigger volumes. I couldn't copy the idea from TSMC or UMC. So I set ourselves as a few variety, big volume wafer manufacturer. This decision derived from internal demands of Acer. I tried to do some devices according to internal demand.

Little did I know, applying this strategy was not easy, it was a long road. Nonetheless, we came up with some CPU or IDT included items, the manufacturing procedure was not fast enough. We licensed a manufacturing procedure from IBM later. Yet, the manufacturing procedures for DRAM and for logic were not the same. We lost 5 billions. That was a considerable loss in Taiwan at that time. People make fun of it and said that we've joined in the 5 billions club. Now it is called the 10 billions club. I went there every week to keep a close watch on it.

Afterwards, UMC merged the other four companies. The wafer OEM [business] was under capacity. TSMC also worried about being surpassed by UMC. Because of its scale, they did not have enough manufacturing capacity. So that's why TSMC began to merge. The rest I cannot recall right now. Shihta. Yes, it was Shihta. Morris [Chang] and I agreed upon a price and made an announcement of the merger. And we merged. After that, Shihta got a better price than we did. Since TSMC needed the productivity. It was possible that UMC also talked to Shihta at that time. So he gave a better price and TSMC raised the price. That's why we got a better price.

Ling-Fei Lin: TSMC merged Acer Display first and then Shihta?

Stan Shih: Yes, they merged Shihta.

Ling-Fei Lin: Back to DRAM. Did everyone notice that the risk was very high? Why did you still join in the project on behalf of a private enterprise? How did you feel about the crisis and risk-taking? Why didn't you think of building up design cultivation in Taiwan?

Stan Shih: First of all, of course we knew the risk was high. But since we had just become a listed company, we didn't think it could be so serious. Also, the capital seemed to be enough. The actual decision was made by the Board of Directors, since Kenneth Tai was the most proactive and positive. Of course I had the same idea too. I proposed the potential risk in the Board of Directors meeting because Chih–Hao Yin and Wan-Ling Chiang regarded this as meaningful. It was the concept of a sense of calling. It turned out that this did benefit Taiwan on our manufacturing procedures. At that time, Acer Display was better than TSMC and UMC. And this project proved Taiwan was capable to train a great number of talents [personnel], so we fulfilled our calling.

Ling-Fei Lin: The mission was to build up capacity for Taiwan's semiconductor industry?

Stan Shih: The capacity of … Indeed, on the strength of sales amount and company size. TSMC and UMC were capable to do…

Ling-Fei Lin: When Acer Display was merged, TSMC and UMC were great enterprises already?

Stan Shih: Yes, both of them were in good condition already.

Ling-Fei Lin: Was TSMC in nice condition already?

Stan Shih: The best manufacturing procedure was still at Acer Display.

Ling-Fei Lin: I mean did they already make great profits at that time?

Stan Shih: Yes, they did make a profit. In fact when I was going to Acer Display, the chairman of Samsung came to me. I don't know if Chin-Tai Shih mentioned this. The chairman of Samsung came to Shih, Morris, and me. He asked us to stop doing the development in Taiwan. We went, and the reason that we came back in the end. It was because the sense of calling. Perhaps because of our sense of mission, we were not frightened by his words. But we still did our own development. Samsung impressed us with its aggressiveness in its R&D investment. The investment they threw in was a lot greater than the U.S., so there is a reason why they surpassed the U.S. later.

Ling-Fei Lin: Samsung was giving you sincere advice at that time?

Stan Shih: He also told a story about his father. He told us that in the early 80's, the foundation Jeong-Hee Park established backed up his investment in semiconductors. And how the Korean government supported Samsung.

Ling-Fei Lin: It was not about DRAMs, but something else?

Stan Shih: DRAMs had just began to start, Samsung has entered the DRAM field in 1985 or 1986.

Ling-Fei Lin: As you mentioned earlier, from the perspective of the systems industry, what other unique relationship is there between system industry and semiconductor industry in Taiwan? Do you think these two industries grew in parallel? Do you think the two were complementary to each other?

Stan Shih: In fact, I talked about the Second Child Doctrine when I developed high-tech industry. Being the first on the second level and thinking with backward integration. This kind of mentality. Why choose the second one when positioning? At that time, everyone was the third or the fourth. I picked the second one with pragmatic thinking. Lots of people regarded being the second as good-for-nothing. As a matter of fact, being the best among the seconds with the attitude mentioned in mind. And following the leader all the way, you may one day become the head. In the long run this is the real pragmatic strategy. Backward integration refers to branding and structuring the system. From the market and the downstream. And then initiate key components' development.

In fact, via this mechanism, the risk is relatively low, but the challenge is greater, especially when trying to expand the market. Creating the system is for the purpose of expanding the market. Without products, there is no way to create a market. Without products, there will not be demand for key upstream techniques. So when you invest in a capital-intensive industry like semiconductors, who do you sell things to? All I can say is, the development of Taiwan's Semiconductor industry today definitely came from the need for information. Same with panel board industry. It makes their investments more… ambitious and aggressive and the use of the capital is also more effective. If we did not have this demand for panel boards, AUO would not have been established.

As to the development of semiconductors, our government promoted the semiconductor industry every day. But in the early stages I still…I still thought it was too early to put investments into this industry. Later on, the Industrial Technology Research Institute threw their development fund into it. There is nothing I could say. Later on when TSMC also wanted to collect funds, Yao-Dong Chao asked me to accompany him to talk to Yung-Ching Wang, to persuade Wang to put money into TSMC. Therefore, a part of

TSMC'S funding was invested by Yung-Ching Wang.

However, while talking about wafer OEMs, there is a history to it many people are not aware of. I witnessed the process of change. In 1984, I started Hung-Ta Venture Capital Corp. Since Mr. Yin was the major investor, some of his former associates such as Jen-Chuan Chuang's father therefore had a chance to understand the U.S.… there was a team that targeted DRAM. Jen-Chuan Chuang was the main designer. The company was named Quasel. In the meantime there were three companies, including Mosel Vitelic and U-SYNC. Of course Quasel was in the best condition. Therefore Hung-Ta Venture Capital Corp, China Development, and Central Investment also invested in Quasel along with some others in Taiwan. Thus, it got the most capital among the three. So it was relatively active in wanting to build a plant. However, the capital was not enough. They solved the problem by buying and placing advanced equipment in the UMC factory. Using certain facilities of the UMC factory, along with the new facilities, we hoped to manufacture DRAM.

Ling-Fei Lin: You said who bought it?

Stan Shih: Quasel bought it, also known as Kuo-Shan. The other two in the U.S. I mentioned earlier could do design. Yet, they didn't have money to put them into manufacturing because in the U.S. we could… the Chinese did the design. But they did not have the money to manufacture. Thus, it seemed that U-SYNC did their manufacturing in Japan and also in the U.S., and Korea. Korea and Japan bought the design from the Chinese. That's why these two countries didn't have factories. Since then, the concept of division of OEM and design was formed.

All products designed and manufactured by Kuo-Shan had the same problems of leakage. Therefore they couldn't sell any. This led to not only lack of strength on design but also a shortage of money. There were no more funds and capital could not be found. People in the U.S. dared not to invest in DRAMs. I knew this story while we were located in the Science Park, Shih Chien Yang came up with an idea, that maybe we could build a central kitchen concept. Quasel, Mosel Vitelic could all manufacture there using the idea of a "central kitchen". This was proposed for the purpose of manufacturing DRAMs. Afterwards, Yun-Hsuan Sun and the like began to carry out this notion. Then ITRI started to invite investment for the service of wafer OEMs.

Ling-Fei Lin: When did it take place?

Stan Shih: It would have been 1985. TSMC was founded in 1987. Apparently UMC took a part in the preparation, when the Ministry of Economic Affairs initiated the project. That's why Bob Tsao said that he spoke of this concept first. In fact, I really don't know who proposed the idea first. All I know is this concept of "central kitchen" was for the purpose of DRAMs. However, wafer OEMs never succeeded in DRAMs. The same thing happened in China and Vanguard International Semiconductor Corporation.

In contrast, TSMC made it with common logic. They succeeded by manufacturing small variety yet big volumes. In a central-kitchen-like center, when there are few varieties but big volume. Then it is more efficient to manufacture by oneself. That's why Intel has a big volume on CPUs. Actually, the CPU made by the Intel model surpassed the original one, DRAMs. In the original manufacturing procedure, DRAMs were in the lead. But then CPUs took over. The main reason was that PCs gathered up all the volume. All the demands for CPUs were quite large. Only big volume can make manufacturing more mature and advanced. As it was, the entire development and evolution of wafer OEMing were changed according to the overall industry environment. The original hope on DRAM OEMing didn't succeed. But self-criticism taught us a lesson. And the truth proved that it was necessary to be self-critical.

Let's go back to the contribution Taiwan made. The PC industry in Taiwan contributed to great development of upstream industries. There are lots of unknown small and medium sized enterprises [in Taiwan today] that benefited from this…the ones that make the castings, metal, plastic, and molds. They

are the reasons for the prosperity. There is one fact that is in fact unfair from the standpoint of PC manufacturer,. We worked for small and medium enterprises without profiting ourselves. That's the foundation for these firms to be prosperous and profitable. We helped their businesses, but not our own brands. Small and medium businesses in Taiwan thus earned a fortune. On the other hand, the Foxconn model had considerable volume. They made their profits from machinery molds and components. The key point that resulted in Foxconn's success was making products that were not the most advanced in technology, but that had flexible costs and the highest efficiency, which met exactly the demands of the industry. Since they didn't sell standardized commodities, the profits would go higher. In other words, you are stuck once you cooperate with them. Not as stuck as with Wintel. But they enjoy more guaranteed revenue.

Ling-Fei Lin: You didn't answer this question: why didn't we educate our own people to design?

Stan Shih: First of all, technique providers didn't allow us to. They did not need to it to be so. As of today, I think that if we can't grasp design, we cannot see the future of DRAMs in Taiwan. The only argument we have now is if the U.S., and Japan didn't transfer techniques to Taiwan. They would also lose because they wouldn't be able to beat Korea. That is to say if we separate OEM and design, looking at the long-term effectiveness, competitiveness would not be sufficient. Thus, Japan and Taiwan should get together and become one and Japan should utilize Taiwan's designing ability. Because if design in Taiwan has its own foundation, it would be fast, low cost and new techniques would be as good as those in Japan. However, the foundation we have is not firm enough [yet]. That is why it has already been almost 20 years. And still there is no breakthrough on this.

Ling-Fei Lin: You mean we utilized designs from Japan?

Stan Shih: No, we could not. We have to bring the design into full play. We completely took over with computers. And we did the same with panel boards. Our technology is no worse than that in Japan.

Ling-Fei Lin: Would you please talk about the reason why Taiwan was able to emerge in the history of the computer industry? Could you please analyze it for us, since no one has said much about this so far?

Stan Shih: The most fundamental part was talent in engineering. At that time our government was more willing to invest in engineering-related equipment. They established Chung-San institute of Science and Technology and Chunghwa Telecom Laboratories. There were many projects and a lot of resources put into this. For training [professional] talents and some technical personnel, such an environment was fundamental. Because when you want to develop, you have to have an endless supply of [engineering] talent and professionals. The second is the government itself.

Let me talk about government-related points first. The government encouraged investment and set up the Hsinchu Science Park, which allowed business to go in with less capital. It was even better for it to develop a market image. Efficiency was also elevated because there is a single window…service people had to go to them. For example, all licenses for construction were issued by the Science Park, every procedure that happened in the Science Park, so the efficiency was higher. As for encouraging investment, it was to keep the resources in the high-tech world. Not only did it attract businesses to come in. They could also keep the money earned in the company, because there is no benefit of you taking the money out. If you keep the money in the company when you lose, the government does not lose with you. And is unable to levy taxes when you win. Then the government would levy taxes on you. And take it later then you use the tax money to invest further for it. Therefore, an investment initiative strategy like this became normal. When high-tech industry needed resources. We had the spirit of doing pioneering work…and did not involve political and commercial relations. The development of high-tech industry is relatively open-minded. There happened to be this opportunity. Government policies, talents and the pioneering attitude of the Taiwanese people, especially when people saw that Acer was making some profits.

Once people saw how good Acer was in this field, they had no excuse not to try it out. Everybody has hope this is the Taiwanese spirit of starting enterprises. Eventually, we invited Chinese talents who worked in the U.S. to come back and establish the Taiwanese information industry. I personally believe these are the main reasons. What's more, another major reason affecting the global ecology, which proved that the world is flat, was the division of labor between Taiwan and the U.S. Japan's computer industry often knocked all the wind out of the U.S. As soon as the U.S. computer industry cooperated with Taiwan Japanese computers were pushed outside of the market. Otherwise, Japanese computers were just as good as American ones 20 or 30 years ago. But as soon as this division of labor started this so-called vertical disintegration, it brought two industrial ecologies, new lives that made it difficult for the Japanese. Because in their culture, the Japanese emphasize integration, so it made it difficult for the industries of computers and semiconductors in Japan. Actually, the disadvantage extended to C&C, Communication. I often say that Japanese computers are incompatible with the other computers. They lost the global market while they won Japanese market. When it comes to cell phones the situation is the same. Otherwise with their technical abilities, they were way ahead of Taiwan back then. Today, because of our cooperation with Silicon Valley in the U.S., many Taiwanese techniques are more advanced than those in Japan. Of course it wasn't so in the 80s, but now Taiwan precedes Japan in this aspect. This also shows how the ecology of an industry changes. And how it was the key effect on Taiwan had it not been for this change, Apple wouldn't be where it is today. Apple now relies on Taiwan for not only components but also R&D support. When Apple tries to develop new products, lots of techniques are developed at the same time in Taiwan.

Ling-Fei Lin: The speed and cost you've mentioned a lot were also the factors of the rising of Taiwan. Am I right?

Stan Shih: This is the trait of culture and the entrepreneurship. If we dig into the cultural feature further, our speed, our flexibility and of course, our cost, are all our strong points. But the cost is relative. It is not always the same. But our speed and flexibility, plus our culture, we don't always look out for number one unlike the Koreans and the Japanese. That is why I say we should learn from the 2011 Japan earthquake. They used to be number one in the world. Why are they in such difficulty today? We all have to learn from this experience whether they are in prosperity or in dire difficulty. We all have to learn from this earthquake. China is everyone's opportunity. Korea is everyone's enemy, while Taiwan is everyone's friend. Yes, Taiwan is everyone's friend, that's how we positioned ourselves. That is how we emerged in the global market. We are everybody's friend, so no one is afraid of us. We do not have the ambition to eat our friends up. This is a very important developmental strategy of Taiwan's.

Ling-Fei Lin: One more holistic question. What are the contributions Acer or Acer Group and Taiwan made to the computer industry in the world?

Stan Shih: Time Magazine wrote a story about this in Asian Heroes. Because of my efforts, consumers do not have to pay $10,000, but only $1,000 for a personal PC. Because of Taiwan, you may expect a PC, with a price of $100. That is to say, the biggest contribution we've made was we popularized technology in the world. Without Taiwan, American companies like Apple couldn't make new technology to be available to all. Taiwan plays an indispensable and substantial role in making computer technology available to everyone.

Ling-Fei Lin: In your opinion, without Taiwan, the popularity of computer technology wouldn't come so fast?

Stan Shih: Yes. Only with this kind of ecology where everyone shares the risks and joins their power to face the ever-changing situation can we be competitive. When problems come up, people solve problems separately. When chance knocks on the door, then we come back together and create another peak. Such an ecology is in fact the world civilization. And in the process of the development of such a

civilization, everyone benefits from it as long as they recognize this pattern. The Japanese do not recognize this so they did not benefit from it. But as long as one agrees that the world is flat…India and the United States are two examples.

Ling-Fei Lin: Some say that Taiwan hasn't really gotten into the core or foundation of technology. Some have said that even the panel board industry is really just a components assembly industry. Do you agree with this thought? In other words, do you believe that Taiwan has not really focused its industry on a core or fundamental technology?

Stan Shih: In my opinion, there are two problems to solve here. The first one is the size. It is a stabilized scale. If you only have manufacturing it cannot stabilize your size, without which you can't even talk about techniques. Taiwan has exhibited capability in ODM. The U.S. in turn rendered computer design. Taiwan doesn't have the size to train designers, so if we have a certain scale in designing in certain fields, like semiconductor wafer OEMs in Taiwan.

Right now, the manufacturing procedure of TSMC is definitely the top in the world. Only Intel and Samsung can compete with TSMC. But they are strong in different aspects. And they have different aims. They are all in the first row in the world since they have the size. In order to have a sufficient scale and ensure a stable size, you have to consider the outlet, the crucial component outlet. For our present OEM size the cluster effect is efficient. On the other hand, in the long run, if others also acquire the same capacities, if customers at the outlets cease to work with Taiwan, and place orders to Taiwanese companies it would become a disaster. That's why we have to have our own brand to strike a balance. If someone attempted to kill off the ODM companies in Taiwan, then the ODM companies might assist Acer and ASUS in killing all the other brands. This situation is like mutually-assured destruction, so everyone can coexist in peace.

This is how I look at the future industrial ecology. The most important of all, we own our techniques and innovation to meet customers' needs. If our customers are all brand owners we are not that close to consumers. If one day what we make is what consumers want, which means it is what the market wants, then where does the innovation come from? We have to understand what consumers need so that our innovation and techniques can be put into full play. Otherwise you could have tons of innovations without any consumers to buy them. Another big problem that I am expecting in 30 years. Right now, the world does not buy our innovations. The Americans are telling the world that the PC, the tablet, and smartphones are mainstream nowadays and we followed suit. Now the situation is such because in order to educate the market, to accept an innovation the resources needed is ten times of those needed for research and development. Ten times is not enough though. You also have to be at the top of this arena. So that people would listen to what you say. So that they can accept without doubts of being conned. So the future development of Taiwan… The question you asked relates to the entire ecology. Your inclination doesn't matter, but your capability does. Market control, size, and techniques are vital to business growth. The key is of course technical abilities. But in order to level-up your techniques incessantly, you still need to rely on size and you have to understand the market. Or else you would not have stable growth. As for your question, it would take another 30 years of hard work, which of course is based on the efforts of the past 20 or 30 years. Do not complain, for it is easy to criticize, but to really obtain that goal not any amount of money or personnel could guarantee success. You need to know how and do it the right way.

Ling-Fei Lin: Would you like to give youngsters who'd like to devote themselves to this field some advice?

Stan Shih: There are way too many opportunities; they are omnipresent. However, "Chance favors the prepared mind". The ability is accumulated and established step by step. So what ability do we need to build up then? Beyond doubt, you have to have fundamental knowledge. But you need to build up valuable core ability, which is different from others' because what everybody has is worthless. That is to say the core ability that Taiwan needs to accumulate is different from that of people in China, in Japan Korea, and in the U.S. We have to think and use the current industry as a basis, plus our multi-ethical,

multi-cultural and creative-ideas-allowed environment. We have to make what consumers… We happen to be good with clients. No matter what kind of market it is, as long as there is a market. You have to look at this way. We need to figure a way out to cut into the B- to-B or B-to-C market to create social value. All young people have to ask themselves “Where is my value?” “What will be my value?” This introspection applies to either teamwork or individual work. You must keep asking yourself “Where is my value?” You need to understand what the environment needs. You need to establish your own ability to contribute your value. In the process of which you will keep growing, and level up your value creating more value. Of this I am certain. We should not talk about luck, for everyone doesn’t have the same fate. Just keep on going this way until the end of your life. Thank you very much.

END OF INTERVIEW

