Taiwanese IT Pioneers: Jonney (Chong-Tang) Shih

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Craig Addison: This is Craig Addison for the Computer History Museum. We're doing the 2nd in our series of oral history interviews with Taiwan pioneers' in the computer industry. And our guest today is Jonney Shih, chairman of ASUSTeK. So Jonney, could you just please introduce yourself, for the record, your name in Chinese and English?

Jonney Shih: My name is Jonney Shih, in Chinese it is Shih Chong-Tang.

Craig Addison: Let's start off. Where were you born and where did you grow up?

Jonney Shih: Actually, I was born in the quiet culture-rich old town in the middle part of Taiwan called Lu-kang.

Craig Addison: Were you born there as well?

Jonney Shih: Yes, I was born there.

Craig Addison: Did you spend your whole childhood in that area?

Jonney Shih: Lu-kang belongs to Chang-hua County. So most of my childhood actually was spent in the Chang-hua area.

Craig Addison: Somewhat sort of influences were there? It was a farming community, I would imagine?

Jonney Shih: Actually, it's not that advanced kind of city. But my father is a government official for the tax bureau, so it was not really that "countryside".

Craig Addison: What about school? What you were best and worse subjects at school?

Jonney Shih: Actually, I was a little bit lucky during my school time. My best subjects were, for example, Mathematics, Physics and Chemistry. But I'm also lucky that maybe, because I inherited it from my grandpa, a very famous writer and painter, I also got some kind of talent. I also got really high scores in arts and painting. Maybe I can show you. This is our product called Enote. When I was young, this is the

kind of drawings we would see in story books.

Craig Addison: You like to draw, draw things like that?

Jonney Shih: Like to draw something like this. And also …Like the dragon. Can you see that?

Craig Addison: So did you want to be a painter or artist when you were young? Is that what you thought you might end up doing?

Jonney Shih: Maybe at that time, my…My model was Einstein or Thomas Edison. But I'm lucky that I've also got interests in this kind of drawing. So maybe that has some good influence when I try to help the company to master both technology and the style of the artists.

Craig Addison: What about worse subjects? What were you not really good at?

Jonney Shih: So that's actually what I try to explain to you. I'm lucky that in most of the subjects, I got very high scores, including drawing, including… Even in high school or in university, in sports I also got very high scores for the marathon. So I think I'm a little bit of lucky

Craig Addison: Did you have a big family? Brothers, sisters?

Jonney Shih: Oh yes, I have got four brothers and one sister. And I think, maybe because of this kind of…family, atmosphere, together with three of my brothers, we all got into National Taiwan University. I think that's also a record in an old town like Lu-kang.

Craig Addison: So it's quite difficult to get into that university?

Jonney Shih: Yes. Because NTU is the No.1 university in Taiwan. It's not that easy for all three brothers to get into NTU together.

Craig Addison: What did you study in the university?

Jonney Shih: I majored in Double E. And I also chose Computer Science. We have several different

kinds of division. And I chose Computer Science. I think…, that's the reason that I eventually got into the computer industry.

Craig Addison: Can you talk about your first exposure to computers or technology? Was that at NTU or prior to that?

Jonney Shih: Yes, frankly speaking. At that time, computer was still not popular in Taiwan. So even at the university, we only got that kind of mainframe, the control data CDC – 6600. So we could only use the card reader to read our programming. But at that time, I was already very interested in trying to understand how it works, how it functions. So interestingly, many of our classmates, we felt that computer itself, technology is so deep. But we had that kind of ambition, to try our best to know the theory, the foundation of the computer technology. So we even tried our best to go to the research institute in Taiwan. And tried to listen to lectures talking about the compiler generator, because you need to master both the hardware and software, to really understand how it works. At that time, the whole Taiwan…technology level maybe was okay, to be able to use the computer, like the data processing. But if you really want to master and also have a really strong foundation for the whole computer technology, including the hardware and software, frankly speaking, at that time, there was still a long way to go.

Craig Addison: Did you have any role models when you were young? People who you looked up to?

Jonney Shih: When I was in the high school, I already tried to study Calculus and theoretical mathematics and physics. So at that time, my model was, like I mentioned, Einstein, who is actually my model.

Craig Addison: Was he quite famous in Taiwan?

Jonney Shih: Of course. Yes.

Craig Addison: You mentioned the school in university. So why did you choose Double E to study when you went into university?

Jonney Shih: It's quite natural because I'm very interested in Mathematics, and Physics. It seems Double E is a very natural selection. Especially at that time, I think EE was also a very hot…department

that everyone wanted to get into.

Craig Addison: What did your brothers study?

Jonney Shih: My eldest, younger brother, the second son in the family, studied Mathematics. And the third one majored in Medical Science. The fourth one studied International Commerce.

Craig Addison: Could you talk about your early job history? Your first job when you finished your studies, for example.

Jonney Shih: Very simple. I only got two jobs. The first one was in Acer. So when I graduated from…the graduate school for MBA. I studies Double E and also studied Management Science. After I graduated from the National Chiao-Tung University for the MBA. At that time, I got two advisory professors. And one of my advisors finally became the Dean in National Chiao-Tung University, and also the Ministry of Education. We are very close. We used to talk a lot about not just the MBA. The Management Science, but also Einstein and the Relativity theory. And so I tried to get his advice. And he asked me, what kind of company you would like to be with? A big company? Or a small company? And I asked him, what's the difference? He told me that in a small company, maybe you have to do everything but you can learn more. So I told him, I'd like to go to a small company. So that's why he introduced me to Acer at that time, (it's) called Multi Tech. And then I got the chance to talk to Stan Shih. So he actually became my mentor. I learned a lot from him, frankly speaking.

Craig Addison: So did you get a personal introduction to Stan from the Dean?

Jonney Shih: Yes, of course.

Craig Addison: Multi Tech was hiring at that time? They were growing very rapidly, I would imagine?

Jonney Shih: Oh that's still a very early stage of Multi Tech. I still remember Multi Tech only got a four-story apartment. And only the 2nd floor belonged to the company. I got a special offer from Stan Shih to live on the 4th floor. I remember I used the box for the electric fan, as you know my table. So I think that's a very early pioneer stage for Acer. I mentioned that at that time in Taiwan, the computer technology was still very young. And for us, many of my classmates actually went abroad. For us, to go into high-tech, I

think the chance was very small. But Acer, I think Stan Shih got his ambition, because the microprocessor at that time was just blooming. And I thought that presented a great opportunity that you can enter the computer technology from the field of microprocessor.

Craig Addison: What year did you join Multi Tech?

Jonney Shih: It's 1978.

Craig Addison: What did you do? I know you were an engineer but what specifically were you doing when you joined?

Jonney Shih: I was a graduate from NTU with a EE, and also the National Chiao-Tung University MBA. So Stan Shih and another founder called Ken Tai, both thought very seriously about my career. They discussed it a lot and [decided] they would like me to start in a Marketing job. And at that time, Acer, Multi Tech, it's called Multi Tech at that time, didn't even have a real marketing division, and I started with a 2-page kind of bulletin, to advocate microprocessor applications.

But at the same time, I told Stan Shih, that I was still very interested in Technology. I would like to spend much of my time in the engineering department. I did the marketing position for only less than 3 months. And then I handed it over to other people and finally devoted myself to engineering because I was very interested in the technology. And I think Multi Tech at that time was really a good environment. Maybe because of my personality, finally, I became in charge of the whole R&D. I had tried my best to do many crazy kinds of innovation, and [make a] breakthrough in the computer technology area. I even did something like using the machine language to write an inventory kind of application, or a data processing, MIS-related kind of software.

And I also tried to have a breakthrough by inventing the Chinese computer, using the micro processor and then tried to do the character construction by the hardware and software together. And I think at that time, there was a crazy guy, who had been a hippie in Brazil, he came back to Taiwan and wanted to invent the Chinese computer. We had to generate the Chinese characters. I think you got around 16,000 Chinese characters. And using the micro processor, you have to generate, you have to write the hardware and the software. So we made a good breakthrough to invent the Chinese computer. After we did that, I think the Chinese computer became very popular in Taiwan. Before that, it's a very big kind of keyboard.

So it's like Chinese typography. So it was never possible for it to become very popular.

And we also did a lot of things, figuring out how to master the computer technology in its very deep foundation. We even had to reverse engineer the operating system, like the CP/M, which finally become the DOS. We had to do the reverse engineering of everything. And we also had to write our own Apple II, that kind of basic interpreters. So actually, one of my models is, well there are two Steves, right? One is Steve Jobs. Another one is Steve Wozniak. Both are my models. I also enjoy the design of Steve Wozniak. I think I could understand that he has been designing computer for so many times, finally when he did the Apple II, I think that's really a beauty, very simple, really a top design.

So we had to also reverse engineer Apple II, and write our own Applesoft interpreter. At that time, we tried to do that and we even…encountered some kind of… Because we needed to develop ourselves, we even encountered a bug, which finally, also happened in Intel's CPU……because of some design flaw in the floating point. The bug was exactly the same as I had encountered, when we did Apple Basic interpreter. We used the software to do the floating point, calculation and had the same problem. So I think we did a lot of crazy things at that time. And gradually Chinese computer, Apple compatible… tried to do a lot of reverse engineering to understand both the hardware and software. And so that we had more and more confidence, we thought we had the real foundation of computer technology. And then we also had the confidence in how to proceed to mass production. And also how to drive the best reliability and quality.

Craig Addison: You said that you lived on the 4th floor, and the office was on the 2nd floor of the building. What was that like?

Jonney Shih: I still remember those old days and a very exacting time. We were so absorbed in computer technology. And there was so much that we could dig into that, it's very common for us to, that we actually slept in the lab. So I think that's why I think that's so memorable. I remember one time after we had done so much reverse engineering, we established a very good foundation.

And then we got into the personal computer, IBM compatible. And I think at that time, Multi Tech was still quite unknown. And we got the chance when the 286 moved to the 386. IBM tried to stay in 286 and Compaq tried to leapfrog IBM. We got the chance to design 386 personal computer. We used a very a special memory design technique, and I think we out-performed Compaq by around 8%.

I remember that very early in the morning, I went to see Stan Shih and told him, this time we could beat all our competitors. And I think that year,at Comdex in Las Vegas, at that time still the biggest computer show in the world, I brought my machine to compete with all the other competitors. We really beat everyone except one company that was called PC Limited, it's the old name of Dell. Only Dell beat us. But I think they used the whole static memory, cache memory, no D-RAM, [it was] too expensive so they could not really do mass production. So we still won the best product of the year. And that's the year that Multi Tech became more internationally well-known. So I think during that kind of very exciting old time in Acer, they changed the name to Acer. I think I enjoyed that very much. I also learned a lot from Stan's ambition. And he also would like us to make any kind of effort. In order to breakthrough in computer technology, so I really respect him very much.

Craig Addison: Was that trip to Comdex the first time you've been to the U.S.?

Jonney Shih: Yes. That time was my first time. And after that, I went to attend the shows very often.

Craig Addison: So what kind of reception did you get? You know, a small, relatively unkown Taiwan company with a computer that was faster than the others? Did you have a difficult time getting acceptance of your computer in the U.S. market?

Jonney Shih: The good thing is at that time…the trade magazine, professional magazine, actually helped a lot. So once we got the best product of the year. I think that actually helped Multi Tech a lot.

Craig Addison: I remember reading in the book Stan wrote about the very difficult times when IBM tried to sue the company or prevent the products from being imported. Were you there during that period?

Jonney Shih: Of course. Yes. Actually, I was involved a lot, both in the lawsuit with Apple, and also the law suit with IBM. I think that's one of the lessons. For the IBM portion, it's only in the keyboard portion. That's a very small part of the whole software. And unfortunately, one of our team members, he didn't make the full cleanroom approach. We actually already knew that we should do the cleanroom approach. But unfortunately, the guy, he didn't do that. And only because of that kind of carelessness actually we had to pay a lot. Because when your competitor sues you, no matter how small it is, you have to pay. So that's the lesson we have learned.

Craig Addison: What about Apple? What was the situation with?

Jonney Shih: Apple… As I mentioned, at that time, we tried to do everything, right? And for the Apple portion, I'm more confident, because we did try to do it by ourselves. But at that time, no matter for Apple or for IBM, one of the big challenges is that you would like to rewrite the software, right? At this time, you also want to make sure all the application software is compatible. So when the application software only gets into the system software and you have to make it compatible, sometimes it will make it very similar. So you've got the very difficult challenge of how to ensure you are clean, but also to make sure it's compatible. So I think because of that we have a lot of disputes, and Apple even recruited a professor from Stanford, and we had to defend. At that time my English was still very poor. Even now it's still not very good, but at that time, I was forced to speak louder and louder, and tried to explain everything I could explain. So I think it was quite a stimulus to me.

Craig Addison: This was in Taiwan or you had to go to the U.S.?

Jonney Shih: I had to go to the U.S.

Craig Addison: So I mean where did you… you said before, when you were in R&D department, you wanted to come up with new innovations. Where did you get your inspiration from?

Jonney Shih: I think my personality is such that, I don't like to do very regular things, like I mentioned even in high school, I already tried to study the Calculus, and the theory of Mathematics and Physics. So I think when I was in charge of Acer's whole R&D, and Stan Shih also allowed me to try to do any possible innovation,

I think I took this kind of opportunity and also cultivated a great team. Because I think the good…good technical people will choose the good technical newcomer. And I tried to cultivate a very good working environment. And we were very aggressive even in the instruments you know. Although we had to save the money, but frankly speaking, I also tried all my best to still provide the best working environment. So we managed to establish, I believe the strongest team in Taiwan at that time.

And we tried to do a lot of reverse engineering, and then we established our own assets, and established this kind of computer technology by ourselves. So I think maybe this is because of this kind of personality,

so we are not… we believe that…that's a great pioneering stage that you can do many things. After that I had a very successful record because of that PC. And Stan Shih also would like me to lead the team to Silicon Valley. I think twice, I led projects [in Silicon Valley], each time was around 8 months. At that time, we still thought the computer technology in the U.S. was really very respectable, admirable, and we enjoyed the opportunity to go there.

We tried to do a Sun compatible kind of a workstation. At that time, it's higher-end kind of design. And I still remember at that time, we finally found out that one founder team that got the financial support from Acer was not doing a good job. After becoming more and more familiar with them, we made up our mind. We didn't even sleep at night, we would work until midnight 2 o'clock or to 6 o'clock. And we would like to make sure what the original founder team, many of them are Chinese people that went to the U.S. and then studied EEs, Ph. Ds and stayed in the Silicon Valley. And they tried to start a company. And Acer tried to support them with seed money. But from the whole process, what I found out was that, the opportunity to be successful was not that big, because I think they didn't do a really good job at that time. So finally we made our mind up that we had to work even harder, and try to cover all the holes, and manage to make it a real product that's mass producible, and has good quality, something like that. So I think that's quite an experience for us. And it also established our confidence.

Craig Addison: This Silicon Valley team the first time you went there was to fix some problems? When you said the found team somebody had gone……

Jonney Shih: At the beginning, of course it was not to try to fix the problems. Because we had to very be humble. We were learning. So we only sent the team because Acer supported it with money. So Acer sent engineers to work with them.

Craig Addison: Were you in that team or you came later?

Jonney Shih: Yes, I was in that team. And I led the team.

Craig Addison: What was that? Really to set up a company in the U.S. or just simply to learn the technology?

Jonney Shih: That's a startup company from those founders. They actually were from some other

companies, like National Semiconductor, or some other companies. And then they talked to Stan Shih and then got the seed money. Stan Shih would also like to send us to work with them. So that's the whole scenario. When we tried to help to fix, it was because we found out, it was in a difficult situation. We tried to take more responsibility. So that's the situation.

The second time was because of the good record. And the second time was more innovative that when IBM started to launch a new personal computer, based on a different architecture called microchannel. Finally it failed. But at that time, people believed that IBM was the king. So immediately we had to develop microchannel. I led them to the States. And also…at that time, Intel sill didn't have the…true regular capability to do the chipset. And then Intel would like to also set up the chipset design team to do the microchannel design. So I had the chance to work with Intel at that time. So I think that's also a very early engagement with Intel. The first engagement is when I did the 386 design, and I think I was invited to the meeting with Intel. And after a lot of my explanation of technical steps, they told me I was the most technical vice president in the engineering they have ever seen, and we established very good relationship. So many times when they visit Taiwan. I like Andy Grove, Dr. Albert Yu, he's already retired, Mr. Sean Maloney, Paul Otellini. When they visit Taiwan, often they will want to see me and have some meetings.

Craig Addison: We will talk more about Intel later, just a question here. Was that like a culture shock for you going to Silicon Valley to live in the States?

Jonney Shih: Of course, there was a lot of interesting things. Our English was still not very good, so sometimes when we still needed to communicate we will say "This is the lamp on the desk". We didn't know how to say that, we would just use some indirect way to describe things and get the chance to be able to communicate. So I think the culture shock is of course also a good experience, you also will see the differences. But I think it's okay. I think for Taiwanese people, because Taiwan is a very small island. And people joke that for Taiwanese people, they only have such a small market, so to do business sometimes with just two suitcases. You go everywhere, you have to survive. This kind of stereotype is not just in the business, but also generally.

Craig Addison: Before the break, we are talking about your Silicon Valley experience. Just for the record, could you tell us the years of the first trip and the second trip? Just roughly when they took place?

Jonney Shih: I think the first trip roughly around ’87, and the second trip around ’88, if I remember it right.

Craig Addison: First trip you said that was for the Sun compatible product. Did anything come of that? Any product for Acer came out of that?

Jonney Shih: Yes, we called it RAMJET 1100. That’s a Sun compatible work station.

Craig Addison: That sounds like quite an ambitious project. Was the company still quite small then?

Jonney Shih: Right. Because at that time, for Taiwanese company, we never had the chance to design workstation level, or the mini-computer level kind of products. So that’s the first try. And also an opportunity to get into the inside of a processor. Because for that product, the processor itself is not a chip, it’s a board. So you need to design the board.

Craig Addison: What did you learn from the Silicon Valley experience that you kind of brought back to Acer in Taiwan?

Jonney Shih: I think, before that, we had already had that kind of ambition, to try to get into the inside of the computer technology, and do a lot of computer engineering. So, we of course, respected very much about Silicon Valley, so we would like to go there to learn. I think we have to admit that we still learned a lot. But another very good advantage [of those experiences] was that we got a lot of confidence. We think the previous work actually was also very helpful. So we managed to complete our establishment of the foundation for computer technology.

Craig Addison: You’re telling me before the story about how you tried to save money for the R&D and not spend so much money on other things. And you were sharing the apartment with a number of people. How was that situation?

Jonney Shih: This is a kind of Taiwanese spirit. As a team, we still feel that we appreciate the company, to have that kind of ambition, to drive the technology. But at the same time, we know Acer is still a small company, so we also have to try our best to save money for the company. I think that’s kind of a good spirit. And that’s why we decided to share an apartment, 4 people together. We still enjoyed that. Most of the time we’re still in the lab.

Craig Addison: After these two experiences in Silicon Valley, back to Taiwan, what were you working on with Acer then?

Jonney Shih: Yes, after that, actually I mentioned we successfully developed the first 386 PC that could outperform Compaq. I think… at least, I believe we got some advantage or got some experience from that project which helped us to drive some breakthroughs. Although it's not really the same team, but I think it's still helpful.

Craig Addison: Acer must have grown quite a bit by now. What was it like when you first joined compared to like the late 80s in terms of culture and the way things were done?

Jonney Shih: Of course there's a very big difference. I think when I joined the company, there were less than 40 people. So it took only the second floor. But I think now you can see it's already…talking about the whole Acer group. I think already very big, overall more than 50 billion dollars.

Craig Addison: But that kind of time–the late 80s –, it was still not quite a big company then?

Jonney Shih: Late 80s? Late 80s…at that time…

Craig Addison: I take it you'd moved from that building to other buildings?

Jonney Shih: I think there's already a very big difference. At that time, because of the PC business.

Craig Addison: You were still running the R&D at ACER?

Jonney Shih: At that time, I was almost in charge of the whole R&D, but you talked about the company size?

Craig Addison: The size of the company, do you remember?

Jonney Shih: The size of the company, I think …maybe around …

Craig Addison: It's okay. It's not a big deal.

Jonney Shih: 2 billion dollars or something like that.

Craig Addison: You were in charge of R&D, did you look into any products that didn't work out? Anything that you tried and didn't work out in PC area, for example?

Jonney Shih: I should say that there should be some projects that actually failed. Otherwise, I would be a genius, right? So always you need to take some risk. But frankly speaking, maybe because of that kind of spirit, we also cherish the opportunity and money for the company. So the hit rate is quite high. It's actually quite high. Maybe compared with Silicon Valley, it's quite high.

Craig Addison: I understand that in 1989, some people left Acer to found another company and then invited you to come along but you declined. Can you tell me the circumstances around that?

Jonney Shih: Okay. Let me tell you the true story. The true story is, it happened in 1989 in a small café. Because the previous… some people I led to the Silicon Valley, for the previous workstation projects. One of the guys started the company called Elite. That's also one of the PC companies and is quite successful. And his name is Thomas Chen. In 1989, actually four of my engineers are very good engineers. They feel that their technology can be even better. Because we have a very good atmosphere, even for the previous one, I think I led him to the U.S. I still remember that very late from 1 o'clock midnight, to around 3 o'clock, I tried to teach him software, because he's good at hardware, but not good at software. So we have a very good relationship. When he wanted to go out to start Elite, we actually talked for about 3 days with tears. As a friend, I think he really has good chance, so finally he started Elite.

So that's why later four of my engineers, they also would like to start a company. So that's the time in the café they tried very hard to convince me that I should lead them. I told them Stan Shih is my mentor. But I was sort of convinced by them. So I told them that I had to talk to Stan. I had to convince him. But finally I cannot convince Stan Shih. At that time, we actually have a lot of dreams. We were crazy about computer technology. We had good confidence, so I told them that we didn't want to start a big company. Let's just start a small, but beautiful company. Talking about technology, this is an engineer kind of dream. But finally I cannot convince Stan Shih.

But my four engineers were still very young, so I supported them with 60% of the capital. At that time,

because Acer also is not in a very good timing, I think especially the U.S. Operation was still not quite successful. That's why three years later, I think that Acer was already getting quite good, I talked to Stan Shih again. At that time, ASUSTeK encountered some bottlenecks, some problem. The second generation engineers were almost all gone. Actually I think Stan also asked me why. Why? Maybe this is tough, right? But I told him I think I know them very well. Sometimes they have personalities, but I still think challenge maybe means opportunity. So I think that's the time when Acer became pretty good. At that time, I told Stan maybe I would like to go to ASUSTeK. So that's the whole story.

Craig Addison: The second time he was quite happy for you to go?

Jonney Shih: The second time…not quite happy. The second time I told him I tried to convince him, that now this side has a challenge.

Craig Addison: At the second time you approached Stan to say you'd like to leave, what was his response then?

Jonney Shih: I think he said he's very happy, of course, not really that happy. But I explained to him the situation. And he still tried to convince me, but finally he agreed. The reason I think that we still maintain a good relationship is because even after that one time, ASUSTeK, they felt they may want go back to Acer. I actually represented them and talked to Stan. But at that time, Acer didn't think ASUSTeK had that value. The value the ASUSTeK side would like to get on the other hand. Acer side didn't agree. Because of this kind of story, so still Stan Shih has the full understanding of the whole story. Of course, at that time, he didn't expect ASUSTeK would become so successful. Otherwise, he may have agreed with that kind of offer. Then there will be no ASUSTeK.

Craig Addison: But basically, you left on good terms. You left Acer on good terms with Stan, you remained friends?

Jonney Shih: Yes! Yes! Actually many times, I still…especially many times at Chinese New Year, I still called Stan Shih to salute him.

Craig Addison: Initially you put in 60% capital, so three years later you were still the largest shareholder of ASUSTeK?

Jonney Shih: Of course after that we had some kind of calculation about, so I didn't put all the 60% as the full share. But it's maybe still bigger than the rest of them, something like that.

Craig Addison: Just for the record, can you say the names of the founders of ASUSTeK?

Jonney Shih: Those founders? Yes. The first one is, in Chinese, Min-Hsiun Liao, Wayne Hsieh, Tze-Hsian Tung, Ted Hsu.

Craig Addison: You joined as the CEO of the company? At that stage, what products did they have? And what markets were they focusing on?

Jonney Shih: At that time, the good thing in Taiwan is that personal computer industry gave Taiwan a good opportunity, because Taiwan used to be good at small business. And the personal computer industry made it, because of the standardization, you can divide [the products into sections]. You can do just the motherboard. You can do the power supply. You can do graphics card. I think that gave the Taiwan industry a very good opportunity. So that's why ASUSTeK could start from motherboards.

Craig Addison: Can you talk a little bit about your relationship with Intel now? And how that helped you or didn't help you, whatever the case may be with motherboard products?

Jonney Shih: Because we still have the chance that always, even doing the motherboards. I think we believe we still have to have the best technology, understand the whole thing. You are designing the board, but my thought is you have to understand the whole computer system. Actually the challenge is even bigger than those system companies. They do the board and the system together. Their board needs to be challenged by only the memory they use, the graphic cards, or the system they use. But for us, to do the motherboard, we set very high standards. You need to drive the performance and at the same time, you have to have the best compatibility. When you try to use other kinds of memory, or other kinds of graphic cards peripherals, how do we ensure the best performance in compatibility and reliability? So sometimes I challenge many of my engineers: you have to go back to read the very fundamental textbook of the electronic theory, to really understand the very high frequency stuff. Because that's the foundation.

People think that the computer is software and hardware, zeros and ones, but going very deep, those really strong foundations are what ensures when the frequency's high, it can still be so stable. You cannot have the computer go down once a week. How do we ensure that kind of reliability? I think that kind of… even from very young you have to master the theory like Einstein did. I think this kind of spirit still helps. We make sure that you need to master both the theory and the practice. So this became our culture. We called it "Focus on Fundamentals and Results". I told them that as a good engineer, maybe you can do lots of good things, but if you don't master the theory, you may not be a top expert. But if you talk about the theory, but you cannot really deliver a very reliable product, a really beautiful product, I think even your theory may be challengeable. You don't really understand the theory. Or, something like that. I think the "Focus on Fundamentals" is the theory, and the architecture result is the real delivery. This becomes our culture, we called it DNA. This helped Asus establish very strong technical aspect.

So even when they lost their second generation engineers, that's the tough time. I started to call all the graduates from NTU EE and convinced each one to come to Asus. And then we re-established Asus. I think now many of them are still in Asus have become very important team leaders or even very high ranking employees. I think that's a very important step, otherwise, you don't have the very strong foundation.

So technically, we recruited talented people and we established it again, and that's why when we became stronger and stronger, and proved to the customers, when quality is not good we even don't want to make money. We would like to recall [the products]. So sometimes we touched the customers. They are quite touched "Why do you insist?" Sometimes maybe you are not like a salesman. But this kind of engineer spirit will help. Of course, gradually we learned more about the whole business, sales and marketing. But I think that kind of culture still became the core. And because of that, we got into a very good position. Though the volume was not the biggest still we were in a very good position. Of course, at that time, our position was not No.1, like the U.S. company called Micronics. But finally Micronics disappeared. Something like that.

And we established our position step by step, by quality, by performance, by reliability. And then even when Intel announced that they also wanted to make motherboards, at the time, the scale was one to 100. We compared it to a shrimp competing with a whale. So all the Taiwan analysts, a lot of people said "Wow, this is tough!" There is almost no way to survive. But I think we still think maybe Intel is the best in processor, but it doesn't mean that they can be the best in the motherboards. For example, the first

innovation of motherboards, one of the advantages was that we started to provide something like overclocking. You have the motherboard that can run faster and faster. That can even use a less frequency, like two gigahertz, and run it up to three gigahertz. Of course maybe Intel doesn't want to see that happen. But I think this became an advantage of the motherboard. And you can still make it very reliable. So something like that and there were also many other technical innovations on the motherboard, because of different components.

The good thing is, Taiwan is a whole infrastructure, so every part will drive the innovation, whether it makes the cost lower or makes some new features. And you are in good position as a motherboard supplier, you can always try to watch and you can even stimulate those players to help. Sometimes we helped to debug for the graphic card, for other portions of the system. And they also appreciated and then we may innovate together. So we became a Taiwan industry, we advanced together. Gradually, even when Intel announced they would also like to do the motherboard, they claimed 30 million processors, 20 million chipsets, and then 10 million motherboards, that kind of goal. So 10 million would already make them a No.1. So it's a big threat in Taiwan in the motherboard industry. But finally you found out…

Craig Addison: How did you survive? You are one of the survivors after that situation…

Jonney Shih: Yes, that's what I tried to explain. Maybe Intel can do very well in processors. But in motherboards to drive the best performance, the best compatibility, and also the speed, the cost, at that time, even when they produced in Puerto Rico, they still could not compete with the Taiwanese speed and the cost. And the board itself, our compatibility was far better than the Intel motherboard. So with the board, I think focus and try to do things very well, maybe still was the only way. That's our thought. So it's no use to fear. What you can do is just confront the brutal facts. You'll never lose faith.

Craig Addison: Before we move forward, I just wanted to ask you one question. You mentioned some of the second generation engineers left, why did they leave? What problem was there?

Jonney Shih: Maybe…I think the four engineers are very good but sometimes…Everyone has strength but also maybe some weakness, so sometimes because of the personality issues and they cannot attract those…so even when you're technically very good, it doesn't mean you can attract the people who follow you. So I think it's a pity at that time. Only three years and then this kind of thing happened. I remember one time that they asked me to go there, and try to give them some advice. At that time, only around 5

o'clock in the evening, nobody was there in the lab. Only one engineer; that's the last one. Actually, that one I also knew. He's also a good engineer. The one who came after them but also was a good engineer. Finally, he came to Shuttle. He went to Shuttle. Shuttle is another company in Taiwan.

So, at that time, I think the quality issue is also a little bit serious. The QT people already found out about some kind of quality problems. So normally when a company has a problem, the symptoms are quality or people, I think it's very simple and there're not too many tricks. Very simple. But I think we managed to rebuild the whole team. And actually, I think the new team, many were from National Taiwan University, the top graduates. At that time, one graduate, who also studied EE, forgot everything he learned and went into the teaching. You know in Taiwan, because the entrance examination to the university is so competitive, so sometimes people have to go to some kind of cram school, something like that. He graduated with a EE [degree], and then went to teach how to get good grades in the entrance examination, to get into the universities, something like that. Because we lacked good people. Even this guy, I convinced him, I taught him, "Remember? What's the basic circuit?" and I taught him how to re-establish his confidence. Finally, he also became a very good engineer in ASUSTeK. That was a tough time. But we went through that.

Craig Addison: At that stage, did you have stock options or anything like that to encourage…?

Jonney Shih: Yes. Actually, at that time, we didn't have…the approach like the U.S. stock option yet. But we just provided similar kind of direct stock offer. Because every year, it will increase and you can still offer them some. That's still a very important incentive.

Craig Addison: Could you talk about the company expanding outside of motherboards and going into other products?

Jonney Shih: Of course, because after we managed to go through that kind of challenge, and even went through the Intel threat, we even beat Micronics, and finally Micronics was gone. And then we had to think about…at this time, you're forced to think more on a strategic level, instead of only thinking about a small and beautiful company. So, then I had to think about…So, then I started to learn from the Art of War, Sun Tzu, this kind of frame I had to think about. We still liked to have the core competence, but we needed to still diversify, something like that. Diversify but still revolving around the core. So that's why we started to also provide the graphic card.

We also got into the 3D graphics, I think it's very tough. Something like the optical drive and the server. We started from the diversification into different technical components, building blocks in the computer industry. And gradually we tried to also get into the system. But we decided to bypass the desktop. We thought it was too late. The best way was to aim ahead. So we thought maybe laptops is a better way. But, it still takes some experiences, so the first notebook…I tried to assemble a new team, because I didn't want to affect the motherboard business. And we were a very small team. We actually developed a notebook like the tank. Reliability is very good. The thermo eventually went to the Russia media station, 600 days without a failure. That one is very reliable. Unfortunately, for the notebook, it's not just reliability that counts. So the second one, we put a lot of effort also into the styling. So that's how we learned. And we think this is a different game. And that's how ASUS started to also recruit more industrial designing people. And that's why I mentioned, now it's very important to have both the right brain and the left brain together. The art and the science together. So you can see we have now many different kinds of products, which shows a lot of styling.

Craig Addison: You were just talking about the first notebook that you've designed. Could you talk a little bit about the decision to go to a brand name? Because, I guess, a lot of Taiwan companies at that time were just the OEM (Original Equipment Manufacturer) model, and then you went straight to the ODM (Original Design Manufacturer) or the brand model. What was the thinking behind that?

Jonney Shih: I think one of the reasons is like… because Stan Shih is my mentor. He used to care a lot about the brand name. Another reason is because we started from motherboards, but we started from the brand name motherboard. Even though it's not a real consumer kind of brand name, it's more for the power users, but we still started from there. Because that is a very important portion of Asus business. Because we have this portion of the business, we enjoyed actually far better margins than the OEM type of motherboard. OEM motherboard has very big volume but the margin is very small. We started from this kind of brand name, motherboard for the power users, which became our very strong foundation, and we also started to do the OEM, like for HP, for Dell, for SONY, and established very good relationship, because we have very good quality, and very good technology. And then we extended the volume. So we called this the giant lion strategy. You also have to have the best strategy, performance, leading. But at the same time, you can also drive the volume. So this is how we drive the motherboard. After that when we tried to do the notebook, very naturally, we didn't want to do the same thing, as the other ODM/OEM companies who were only doing that for notebooks. We also would like to have our own brand name, so

we tried to do it parallel, from the very beginning we have had that kind of ambition.

Craig Addison: Was it a big struggle to launch your own brand name?

Jonney Shih: That's a very good question. So at the very beginning, like the notebook, as I mentioned, we thought we had the best reliability. In the first months, we only made 3 units. So we started to learn and then tried very hard. At the same time, we also thought maybe we should try to also get more volume from the OEM/ODM. So we approached some 2nd-tier notebook companies like EPSON. I remember the first time I went there, I had to wait for two hours only to talk to a section manager. But I think, this is all very helpful for you to learn. So, we still tried to do it in parallel. And…I think, at the beginning stage, I think this is a good strategy. The problem happens when your brand name also becomes significant. Then the competition, the OEM/ODM customers become a big issue. So this problem didn't happen until 2005, 2006, 2007, that kind of time frame.

Craig Addison: In the early 90s, when Compaq launched the price war in PCs and closed the price gap between brands and clients? How did that affect you at that stage?

Jonney Shih: I think the price erosion …the main threat was maybe even more serious around 2007 or 2008. Before that, we were still quite okay. Before that, we were still doing OEM, and also our own brand name at the same time. I think because at that time, even some of the price competition, but it's not really the mature stage yet. I think notebooks at that time were still at a growing stage. So even though our volume was not in the top 10 list, we still could enjoy the good margin or profit, because we still tried to drive some innovations, some different styling like leather notebooks, a Lamborghini. Although the volume was not good, I still think it helped.

So the challenge is as you mentioned, when the real mature stage comes, and then…so that's the financial crisis era. I think that year the price dropped from $399, 499, 599, 699 as the percentage of the whole, from around 30 something percent, to around 70%. That's a big one. Before, we can enjoy SONY, they have the notebook 6099. Then we can have 3099, but still very good styling. So at that time, why did we lose SONY? Because we've already maintained very good, they said our R&D is No.1, our quality is No.1, and the team is No.1. And I went to Japan to talk to the head, and maintain the relationship and he almost said okay. And then after that he went to Europe, and he visited many different shops and found out that Asus is their biggest threat. So that's the problem. That's the time it started to happen and also

the price erosion. So actually the problem that we encountered the financial crisis, was not really the financial crisis itself. Actually it was because of something already happening. So something that makes you successful is also something that makes you fail. You're also driving the Eee PC, so it uncovers the crisis.

Craig Addison: So Jonney you were talking about some of the problems and the financial problems. Was that around 2002? Is that the period you're talking about?

Jonney Shih: I'm talking about the system brand, it's the financial crisis of 2008, the fourth quarter of 2008.

Craig Addison: Let's just go back because I read a case study around 2002. You talked about when you always talked about technology, you had other boards on your desk. And after that, you changed to talk about profit numbers and things so…what happened there?

Jonney Shih: Yes, I think that's another very interesting period. We encountered the challenge that even the motherboard itself, we needed to drive the volume. We used to be in a good position, even after we beat Micronics, and became the No.1 in position. But the quantity was at that time, I mentioned Elite, today's Elite but at that time, there was a company called PC Chip. PC Chip and Elite became together. They still had bigger volume than Asus. And at that time, because the motherboard had price competition, we faced the 2nd-tier like Gigabyte or Microsoft, they will cut the price and grab the market share from Asus. That's the time that you know … one year, we had the highest profit. The second year we dropped around 40% of that profit. We have to confront the brutal facts. And that's the time that we started to drive the giant lion strategy. So we had to drive. We could not be satisfied with the highest position. But if my market share has been grabbed by other competitors, it's a risk crisis. So we started to drive the giant lion which means you still need to have high quality performance, feature, leading technology, like in the jungle lion, but also you have to have the biggest volume. We told all of our people that maybe a small lion will be killed by a big tiger so you need to also be big. After we drove that for around three years, we became the No.1 in volume, which equals No.2 + No.3 + No.4. Then we completed the giant lion strategy. I think this is also a very important stage in our history.

Craig Addison: How did this affect you? You like to talk about technology, did it change you in any way?

Jonney Shih: Right. I think that's also a good lesson to me that only driving the technology is not enough, because you are in the business. So I finally told our people that because we are not…doing an academic job in the university, so, even when we talk about innovation technology, this is still in the enterprise. That's the time we started to drive the so called "Lean Thinking", [borrowed] from the Toyota concept. For lean thinking, you always have to think about the business, the value stream, and you always have to provide the best value, with the lowest cost to attract the customers. So technology is, the means but the final goal is to attract the customers so you can really have the value in profit margin. This is how we drove the Lean Six Sigma together. The Six Sigma is from GE, from Motorola, but we combined the oriental Toyota "Lean" philosophy. We think that can make it more complete. I talked to the Motorola University, the project head, I asked him why, "why have a lot of companies failed, while doing this kind of project?" I think I talked to him for around 8 hours, and finally I thought I'll keep asking our people, if during the time, we had lost the soul? When we… a lot of people drive this campaign, and they will lose the soul. And we think in three or four years, we always tried to ask ourselves. Not driving the quality only for the sake of quality, because eventually it's not a simple thing. You cannot drive the quality without thinking about the cost. You have to think about speed…Even when you really master this kind of "Lean Six Sigma". You will find out even "Lean Six Sigma" is not contradictory to innovation. So sometimes you spend cost but if you can have good innovation, you can drive good value. And people think you are driving the lean, very lean, so they think the cost is the key something like that. You will have misunderstanding, you'll lose the soul. We keep asking ourselves, it becomes also a very important part of our learning. And then we integrate them into our culture, the "DNA".

Craig Addison: I'm going to wrap up here with few big picture questions. How would you see the impact of Taiwan computer industry? Looking back as a historian maybe in a hundred years of time, how is Taiwan going be perceived in terms of its impact on the computer industry?

Jonney Shih: I think if we classify the past 30 years as the personal computing era, then during this era, I do believe [that] the whole Taiwanese industry also played a very important role. Of course, Intel, Microsoft they also played very important roles. But I think the whole Taiwanese industry also contributed a lot. And I'm very pleased because of all the different kinds of segments, of the computer industry in Taiwan, they focus very well. And keep driving innovation and cost advantage. They help to drive the whole personal computer industry, to become very prosperous. I think the good thing is during this period, we really established a very strong foundation. Really from scratch, no matter quality or cost, or technology or innovation. I think we really fully established and support the whole industry. So now, I think

whenever talking about the computer industry, you cannot overlook the Taiwanese part in many of the segments. I think Taiwanese industry actually played a very important role.

Craig Addison: Personally what accomplishments that you're very proud of?

Jonney Shih: Maybe the establishments of Asus, and that (Asus) can become a real global brand, and can represent one of the very key parts of Taiwanese, the Taiwan computer technology industry. I think that's what I feel the most proud of.

Craig Addison: Is there anything that you would do differently? Like a key decision you might change, for example "Thinking back, I should gone to Asus, the first time." Anything that you would have done differently looking back?

Jonney Shih: I think during the time when I transformed myself from an engineer and then become an entrepreneur, and also talking about the arts, the styling. I found out that …when I changed my role, I think that …even as an engineer, you can still do very well, when you try to formulize the company strategy. So that's why I used to study very hard on the "Art of War". If I look back, I believe that many of the strategic decisions for Asus are so far still mostly correct from my review, my analysis. So if you think about one that I would like to redo, maybe it's the… Maybe around 2006, I should make up my mind very clearly, that we should separate the brand name and the ODM. Around two years ahead. Because finally in 2008, 2007 around that time, I flew to Michael Dell's house and talked to him, tried to keep the business, said how we could still have the brand name and ODM. But it's very difficult. I talked to Tom Bradley, HP, I think this kind of challenge, if I can do it very decisively, like I did in 2006 or 2005, I think that would maybe be the best decision.

Craig Addison: What advice would you give to a young person, wanting to get into the technology industry as a career?

Jonney Shih: I think for young engineers, if I remember my career path, I would advise them that at the beginning don't think too much. Focus and sharpen your sword. I think try to drive the technology to the best. And also, another advice is when you are sharpening your sword, at the same time, keep your mind very open. Don't fall into the trap of narrowing your field, for then you would have only limited technology. When I studied Einstein, I didn't think the technical thing is limited, you still need to know the theory. The

theory for every other field actually is the same. When you go to the fundamental, you will see it is the same. So the beauty, and the truth, and the goodness actually all have the same root. So if you can have that kind of mind set you can be open. And today's new trend is cross-field. Even on the technology side, I encourage young people that they also have to be able to cross fields. They go to the fundamentals but they also have to be able to cross the fields. And then also they have to be open not just technically, but also to business or to the art. If you keep an open mind, then when you sharpen your sword, you still need to have something very sharp, but you also have to be open, so that you can cross fields. That's my advice.

Craig Addison: Thank you very much, Jonney.

Jonney Shih: My pleasure.

END OF INTERVIEW

