Oral History of Hajime Sasaki

Interviewed by:
Stanley T. Myers

Recorded: December 12, 2014
Tokyo, Japan

CHM Reference number: X7373.2015

[Editor's note: the interviewee speaks Japanese. This interview was conducted via a translator and the interviewee's answers were transcribed to English.]

+++ 00:00:05 +++

Stanley T. Myers: Today is the 12th day of December in 2014. I'm Stan Myers, and I'm here to have a discussion with Sasaki-san of NEC. Sasaki-san entered NEC in 1961 after earning a Master's degree in electrical engineering and from the mathematical and physical sciences department of graduate school at the University of Tokyo. He has had a long and very distinguished semiconductor business career and been in the semiconductor business operations. He became General Manager of the LSI Development Division in 1982, Associate Senior Vice President in 1988, Senior Vice President in 1991, Executive Vice President in 1994, Senior Executive Vice President in 1996, and became Chairman of the Board in 1999. Subsequently, he took the position of Executive Advisor in June 2009, and the honorary advisor in July 2012. Among this is industry and academic activities and achievements, Sasaki-san chaired the Communications and Information Network Association of Japan, better known as CIAJ in 1999 and the year 2000. And the Japanese Electronics and Information Technologies Industry Association, as we know as JEITA in 2003 and 2004. Also, he was Chairman of the Committee of Europe of Nippon Keidanren from 2000 to 2008, President of the Information Processing Society of Japan in 2007 and 2009, and President of the Japan Techno Economics Society at present from 2010 to 2014, among other positions. Sasaki-san received an award of Persons of Scientific and Technical Merit from the Science and Technology Agency of the government of Japan in 1995. In addition, the IEEE presented him the title of Fellow in 1996, the third millennium medal in 2000, the Robert N. Noyce medal in 2001, and the title of Life Fellow in the same year. In the year 2000, he became Foreign Associate of the National Academy of Engineering, NAE, and Fellow of the Institute of Electronics Information and Communications Engineer, which gave him the distinguished achievement and contribution award in the year 2001, and the title of honorary member in 2000. Moreover, he was honored with the Deming Prize for individuals in 2005. The Legion of Honor from the French government in 2006, the Sheffield Fellow from Yale University in the same year, and the IPSJ Contribution award from the Information Processing Society of Japan in 2010, and the Order of May to merit the commander – that's the Argentine public award in 2012. So Sasaki-san, let us begin with you describing to the audience here, your early years, your family background, where you were born, and where did you grow up, and what your parents do, and the universities that you attended.

+++ 00:04:55 +++

Hajime Sasaki: I was born on April 6, 1936. Nagoya was the place where I was born. I did not have any particular relationship with Nagoya. My father happened to work for the Nagoya branch of the Bank of Japan, and that was the reason for my birth there. I lived there for about 2 years, but because I was a baby, there is no way I remember that time, right? After that, my father went back to Tokyo, and I have been living in Tokyo since then. However, the war broke out, and I evacuated from Tokyo in March 1945 since there was danger of it becoming the target of the air raid to Kyushu where my mother's home. We evacuated to Nakatsu, Kyushu where Yukichi Fukuzawa was born. In Nakatsu, there was a park that has his monument engraved "Independence and Self-respect." I remember I wondered what it meant even

though I was a little boy at that time. While I was in Kyushu, the war was over on August 15, and I returned to Tokyo. So, since I was a 4th grader student, I have been living in Tokyo without moving to any other places. My father worked for the Bank of Japan, and except the Nagoya branch period, he was in Tokyo all the time, and I was with him. I had a younger sister who was born in 1942. My father was interested in Science. He told me that when he took an entrance examination to a high school, he was unable to decide which program he wanted to major in: liberal arts or science and engineering. He consulted with his uncle and his uncle said to my father, "Since you are not good at drawing, you are not suitable to science and engineering." That was the reason he applied to the liberal art program. I was told that because he was unable to decide his preference and applied to the school late, his application number was near the end, and there was hardly anyone left that was near his number as the application numbers were called for passing the exam. As I grew up, I was interested in electricity. I read a book, titled "20,000 Leagues under Sea" written by Jules Verne, and I was interested in electricity because Captain Nemo, who is the captain of the submarine, the Nautilus, explained that the driving power source of the Nautilus was electricity. I read it rather than heard it, but I was very much interested in the magical power of electricity. In 1930s, the wireless application was mainly radio broadcasting, which was not that intelligent of a use of electricity. Electricity was mainly used for turning on motors and lights, and listening radios. When I applied to the university, I was wondering what I should major in. Anyhow, I decided to apply the division of science and engineering majors, and took the entrance examination. When I had to choose my major, I thought I would major in electricity, but I was also interested in organic chemistry. However, I was told that organic chemistry would have a risk of explosion, which I did not like. Mechanical engineering required drawing, and I did not like it either because drawing is such a time-consuming work by drawing line by line with ink at that time unlike these days. It was not a time like now. These days, we can print out drawings from a printer using a CAD tool without spending much time. So, I gave it up. I thought that the least time consuming engineering would be electricity, and that is the reason why I majored in electrical engineering. This is my story until I entered university. Well, shall I continue? Do you have any questions?

+++ 00:16:50 +++

There was a railroad near the house in Nagoya. My mother told me that I stopped crying when she took me near the railroad. I think I liked trains since then. I grew up with the hobby, and before I entered an elementary school, I started reading train guides. There was a lot of Kanji in the guides, and it was difficult for me to understand them. However, I was lucky to have relatives living nearby my house, so I asked them, "What is this character?" I learned many Kanji that way. Even after I grew up to become this age, I still enjoy things related to railroads. That's all for now for my hobby of railroads. By the way, train guides were the first books that I read for myself. I mean as the book that uses Kanji other than children's books.

+++ 00:20:17 +++

My other hobby is music. We had a phonograph in our house. I liked to listen the photograph. That was my father's wooden phonograph. I was told I bit the wooden part of the phonograph while I was listening music from it.

+++ 00:21:41 +++

I still enjoy music. I am still a member of the periodic concert of the NHK Symphony Orchestra. I have been a member since I was an 8th grader, and it is the longest social relationship that I have in my life.

+++ 00:22:52 +++

I believe I should be awarded for the patronage I've had by NHK, but they has not done anything to me yet.

+++ 00:23:09 +++

Myers: Okay, yeah. I was just going to ask him: who was the most important and influential person in your career path? Does that make sense to…do you understand that question? As he was going into his professional career, who was the most important influencer there? Father, mother, friend, professor or whatever?

+++ 00:23:39 +++

Sasaki: That's a good question. I think it was my father because he said to me, "Do whatever you want to do."

+++ 00:24:13 +++

Myers: That's good.

+++ 00:24:13 +++

Sasaki: And, he also said to me, "I wanted to major science and engineering but I gave it up because I was told the requirement. But I wish I were doing science even now."

+++ 00:24:46 +++

Myers: Right. Okay, I guess the next question – I'll try to make it simple but…what were the key semiconductor related projects, with which you have been associated during your career? You've been associated with so many, but what do you think were the most important projects that you were associated with in your career?

If I were choose one project, it would be the one I integrated all company functions required for semiconductors – that is, development; technology; manufacturing; and sales, into a single system. In particular, I concentrated research and developmental activities into a single place in order to establish better communications among them. When I reflect on that project, it was the most challenging project that I ever been engaged in.

+++ 00:27:09 +++

Sasaki: For that reason, if I look back to the past, I feel I was able to manage an ideal business operation from 1993 to 95.

+++ 00:27:48 +++

Sasaki: Having that business operation idea with me, I was also engaged in establishing the World Semiconductor Council in order to seek the harmonized business worldwide.

+++ 00:28:27 +++

Sasaki: I think it was an epic I served as the chairman of the first World Semiconductor WSJ. Sorry, it was WSC. It was the World Semiconductor Council. I think that achievement was the reason for the Robert Noyce Award.

+++ 00:29:40 +++

Myers: One question I would have here is…before we move into another area – why did NEC decide to focus into semiconductors? And what were the goals? I'm talking about the early 70s and 80s; NEC really began to focus on semiconductors, and so the question is: why was that a big thing for them to do?

+++ 00:30:12 +++

Sasaki: Originally, NEC was a manufacturer of telecommunication equipment for telephone lines, and the company was established as a joint venture of Western Electric. As the telecommunication technology was being advanced, we used vacuum tubes, which were then replaced with semiconductors. The company adopted such technology advancement, and the reason for the adoption was that the market was naturally not for consumer products but industrial fields that require highly liable and high-performance telecommunication equipment. For this reason, demands for semiconductor devices for telecommunication equipment from the in-house business sections and the newly started electric computer section drove the semiconductor operation.

+++ 00:32:56 +++

Myers: One of the questions that follow that is: what were the major reasons for Japan's success? Japan was very successful in semiconductors and the late 70s, 80s, and into the 90s, and what were the reasons for the success and what were the keys to the success, not only in the Japan, but NEC at that time?

+++ 00:33:24 +++

Sasaki: I think there were 2 major reasons. One was that NEC had the telecommunication business section and also fundamental research and development capabilities. The other was that the Japanese

domestic semiconductor industry had two large markets of home appliances and home electronics such as calculators and desktop computers.

+++ 00:35:05 +++

In other words, I think we already established the critical fundamental technologies, and we had domestic commercial markets from which we were able to make profits.

+++ 00:35:46 +++

If we consider the manufacturing point of view, Japanese respect very special skills which would be similar to “craftsmanship” in English. For example, spinning thread and weaving cloth, engraving wood are such specialized skills. Japanese prefer detailed workmanship and curiosity and enthusiasm of performing skills. I think we transferred such skills to the manufacturing skills and improved the manufacturing technologies.

+++ 00:37:43 +++

Myers: What led you to begin to get together with the Bell Laboratories at NEC – some time in that period of time, you seem to get together and form a good team; what led up to that?

+++ 00:38:06 +++

Sasaki: Actually, in 1940s, NEC had no capital ties with Western Electric. That was because of the war, and ITT held the stock shares of NEC. Therefore, the relationships with the Bell Laboratories and Western Electric were only technology exchange or patent licensing, and the capital tie was lost due to the World War II.

+++ 00:40:08 +++

Myers: I know you played a major role in all of that activity between the United States and Japan in the trade frictions. That’s when SEMI – we set up the international trade partners. We didn’t want to go through that. Once you get governments involve.

+++ 00:40:27 +++

Sasaki: Around 1984, I was not in charge of the semiconductor business section, and I was not involved in drafting the first semiconductor agreement directly. However, I was involved in various exchange programs with U.S. semiconductor manufacturers, including technology exchanges, agreements of comprehensive product licensing, and manufacturing contracts. I think I contributed to ease the tension between Japan and the U.S. by promoting technology contacts and providing products.

+++ 00:42:42 +++

I also believe the corporate relationships should be not just between companies of the two countries but also among several companies in various countries, and I invited European semiconductor companies to join us so that multiple companies may be involved.

+++ 00:43:38 +++

I believe that as a result, we were able to establish the WSC – World Semiconductor Council.

+++ 00:44:01 +++

Myers: I'm going to move into the finalization of our questions, and the first question is: in your opinion, is the appropriate Japanese companies in semiconductors today – what's the appropriate environment? What should they be thinking today, and into the future?

+++ 00:44:27 +++

Sasaki: I think the present semiconductor industry is at a turning point if I consider the semiconductor technology and its market. In other words, we are in the phase where we need to consider how to modify Moore's law.

+++ 00:45:26 +++

The market has also become versatile. Although the world pollution is increasing, all of us do not have the same demands. People of increasing population regions need inexpensive products. They set high values on the product price – not on the product performance. There are few classes of people who want high performance. Not many customers need high performance. I think the current issue is how to balance the wide variety of demands and technologies that are getting advanced with higher costs.

+++ 00:47:29 +++

Myers: Well, that would lead me to a couple more questions. What advice would you give to a young student – maybe he liked trains, too, you know, but a young student. What advice do you give to them about coming into the semiconductor industry?

+++ 00:47:49 +++

Sasaki: Without doubt, that is a very difficult question. I would say that it is curiosity after all. These days, everything is black boxed, and we cannot look inside. We need keep having a mind of curiosity to find the essential. You cannot accomplish this if you are inside and you need to go outside once. I am afraid we need to leave the Earth and feel its existence in order to have curiosity. With such curiosity, we may find something new, and I think it is possible for technology.

+++ 00:51:34 +++

I think it is critical to have good school and academic curricula. Either hardware or software: you cannot achieve a true technology without designs. I mean designs should include prototypes.

+++ 00:52:09 +++

Myers: One final question, and give some thought to it. What's the most exciting thing you see in the future for technology, semiconductors…the interrelation – that whole food chain. What's the real excitement in the future? That's difficult.

+++ 00:52:38 +++

Sasaki: That would be from the global stand point of view, utilization of solar energy. We need to build our world without using gas and fossil fuels, and I believe the semiconductor technology makes it possible. We may not live on the Earth without constructing such a world. The end of our lives may happen, 10,000 years, or even 100 years from now.

+++ 00:54:10 +++

Myers: Healthier atmosphere.

+++ 00:54:11 +++

Sasaki [in English]: That's it!

+++ 00:54:12 +++

Myers: I think that's it. Do you have anything you would like to have included in your message for the future – not just semiconductors, but for all the technical environments? For certain, there's semiconductor applications and materials that are staggering these days, like the use of sapphire to replace the hip, or the use of sapphire on your iPhone as Apple has started to do. Is there anything in your mind that sticks out that we ought to be thinking about?

I think it will be various sensors, and smart controllers, too. We need semiconductor devices that can assist human lives with various functions. They may not be made of silicon, but some other materials, and equipment manufacturers would produce such devises for themselves. I think such business strategy would be acceptable. The number of semiconductor device manufacturers would even decrease. I am imaging such future business.

+++ 00:56:34 +++

Myers: Thank you very much. I appreciate your time, effort, and energy, and if you think of anything else, you can talk to Tani-san and we'll see if it works in with the interview.

+++ 00:56:49 +++

Sasaki [in English]**:** I also am very pleased to have opportunity to talk about future of semiconductor industry.

+++ 00:56:57 +++

Myers: Yeah.

Sasaki [in English]**:** But I am free from the industry – just looking down.

+++ 00:57:06 +++

Myers: You know, we humans are blessed with very limited vision. I can remember in the late 80s, early 90s, my wife bought me my first cellphone. It was big like a brick. I could hardly hold it. Rarely used it, but at that time, I could not have dreamed…because we didn't have personal computers, you know, laptops. We didn't have cellphones. The Internet wasn't there. That was only 14 years ago. The mid 90s, maybe 20 years ago. So it's very difficult to think in terms of today and what we've got, and the rate at which technology is changing – to think, what's there 10, 13 years from now. But it's interesting to get your opinion because you've been running a very important company for many, many years through all that technology transition, and I personally appreciate taking your time to spend with us.

END OF INTERVIEW

