



## **Oral History of Kazuo Kimbara**

Interviewed by:  
Stanley T. Myers

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

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**Stanley T. Myers:** Today is the 16<sup>th</sup> of December 2014, and I'm Stan Myers, and we're discussing with Kimbara-san about his family, about his life in the industry, professional experiences, and I might interrupt at this point and say: if you want to talk a little about that period of trade friction between US and Japan, some people have brought that into their discussion. If you don't, that's fine too. So today, my guest is going to discuss the industry in Japan, is Kimbara-san, senior advisor of Hitachi Ltd.

**Kazuo Kimbara** [in English]: Yeah.

**Myers:** Kimbara-san was born on February 26<sup>th</sup> in 1929.

**Kimbara** [in English]: Yes.

**Myers:** He graduated from Nagoya University in Electrical Engineering in 1951, when Kimbara-san joined Hitachi. For 25 years since he joined Hitachi, he was on the user's side of semiconductors. Kimbara-san was responsible for automatic control systems using IC and microprocessors for various industries such as iron, steel company, automobile factories, and water and waste water systems. In 1976, he became General Manager of the Takasaki Works, which with bipolar IC and discrete semiconductors in 1978. From 1978 through 1985, he managed Hitachi's Musashi Works, which produced MOS IC and LSI, and he was General Manager. Kimbara-san run Hitachi semiconductor business through various positions, including Board of Directors; General Manager of semiconductors and IC division from 1985 to 1989; Executive Managing Director and Group Executive of Electronic Device Group from '89 to 1991; and Senior Executive Managing Director from 1991 to 1993. He served Hitachi as senior advisor from 1993 to 1995. Kimbara-san managed the joint venture between Texas Instruments and Hitachi, Twin Star Semiconductor Inc., which was located in Texas in the United States as chairman of the Board and Director from 1995 to 1998. He was appointed to the position based on his 44 years of experience with Hitachi and the management of various technologies and related business operations. Kimbara-san also served semiconductor equipment and material suppliers, Hitachi Chemical, as corporate auditor, and Tokyo Seimitsu as senior advisor. So with that, we'll begin. Tell us a little bit about your background, early years, your family, and any good stories you have in mind.

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**Kimbara:** First, I would like to talk about my family. Currently, I am living with my wife. I have 3 children and 5 grandchildren. Prior to Hitachi, I lived in Nagoya. In the year of end of the war, my house was burnt down due to air-raid. I think that was May 1945. So, I rent a room when I was at high school and University. Then, I entered Hitachi and went to City of Hitachi in Ibaragi-prefecture.

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**Myers:** What does his mother and father do?

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**Kimbara:** My father was an ordinary white-collar worker. His work had nothing to do with technology. My mother did not work at all. I have a younger brother. He worked for Tokai Bank. He was promoted to auditor as his last position. I lived with such parents and sibling. I graduated from high school and the University which are of the Japanese old education system. From the middle school to University, I had the old education system. I graduated from University in 1951. That also had the old education system.

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**Myers:** When and how were you exposed to and learned about semiconductors?

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**Kimbara:** The time I was involved in semiconductors was 1976 when I was transferred to the Takasaki plant, where I was involved in semiconductor productions. Prior to that, for 25 years, I worked for controlling systems. I used semiconductors in controllers. I was a user of semiconductors, but suddenly I became a manufacturer. I was really surprised at that time.

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**Myers:** In those early years when you were learning and going to work, who influenced you mostly to take the path that you've taken in your career? Who was the biggest influences?

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**Kimbara:** Well, what was the year? I think it was 1960, maybe 1973. Around 1973, I was working on a controlling system, and I wanted to have a microcomputer for the controlling system. I went to Fairchild [Intel?] to listen to their explanations. It was a 4-bit microcomputer and as a designer of the controller, I was thinking if I should use it.

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At that time, Hitachi also had a semiconductor group. I was involved in the controller for the factory. I visited with the division director of the semiconductor operation and explained to him about the microcomputer which I wanted to have. Fairchild, which is a former entity of Intel, [correction: Intel was founded 10 years after Fairchild by Fairchild alums. Fairchild was never part of Intel] had a good product. I asked him if Hitachi could make it. I requested him to make it for me at Hitachi. He said to me, "That is a good idea. How many units do you want? Would it be several tens of thousands units per year?" I actually would buy only about 100 units annually. He told me that quantity was not acceptable at all. He rejected my idea because it would not make a business. So I had no choice but use the products of Fairchild and Intel. I had such an experience.

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I did not put up with the rejection, and I brought the issue to the corporate managers and the president of the company. I told them that I wanted to have a microcomputer but I was rejected by our own company because it would not make a profit. I had no choice but to buy a US product. One year later, I was instructed to transfer to the Takasaki plant and work for the production side because I wanted a microcomputer then.

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For that reason, I was switched to the production side of semiconductors. Actually, there was a huge difference between the user side and the manufacturer side. As an example, if you think about an electric locomotive, operating the locomotive and making it are totally different. Likewise, I felt deep in my mind that using semiconductors and manufacturing them were indeed totally different.

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Because of the company assignment, I served as the General Manager of the Takasaki plant and then the general manager of the Musashi plant. At the Musashi plant, there were about 6,000 employees, so I did not take any subordinate to the plant. I went there alone. I studied hard, but I did not understand methods for designing and manufacturing semiconductor devices. It took me 3 years to getting know them.

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**Myers:** So it's self-learning on the job learning. On the job training.

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**Kimbara:** While I was the General Manager of the plant, which was quite some time after I went to the plant, Hitachi's computer group had a big conflict with IBM about the intellectual property of computers. At that time, I was the Division Manager of the semiconductor division and I was selling many DRAMs to IBM. While I was doing business with IBM, IBM claimed that would be a problem. So, I went to Poughkeepsie, NY.

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The manager of the procurement department of IBM in Poughkeepsie asked me "who was my superior, and who was the superior of my superior?" He had a question. The top of the hierarchy is the president of my company, who should be against me selling DRAMs to IBM because of the conflict with IBM. The president would make an objection against the DRAM sales to IBM, yet I was still attempting to sell to IBM.

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I answered him that I indeed had a company order from the president but that was a rough work quota of annual sales amount. That quota is how much I should produce profit. However, the president did not instruct me how to operate the business – where to sell, and so forth. He did not give me any instructions on such actual business operation. Therefore, I made the decision on my business operation. I decided to sell DRAMs to IBM by myself, and would continue doing that. The manager of IBM was satisfied with my answer. IBM continued using our DRAM after the meeting. That was my business operation.

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**Myers:** When you first went to Hitachi, were you associated with semiconductors or other devices? Were semiconductors first?

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**Kimbara:** Yes, I was. In fact, I learned a lot from the business with IBM. What I learned was the following. A group of the procurement department of IBM visited with our plant for about a month for checking the plant. They conducted an investigation thoroughly. Our plant, the Musashi plant, had subcontractors and they visited with all subcontractors. Three of them in total. I was astonished with their investigation. I never experienced that much of thorough investigation even from Japanese companies. IBM requested us to deliver products with good qualities. They asked us to make superior products. I learned a lot from that business operation.

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At that time, the issue on trading semiconductors between Japan and the U.S. was getting serious. The Minister of International Trade and Industry took me, and Mr. Sasaki of NEC, Mr. Kawanishi of Toshiba, and Mr. Kobayashi of Mitsubishi to various places in the US including Washington D.C. to have discussions behind the curtains. We were on this side of the curtain, though. Anyway, even though we had such discussions, I did not see IBM at the meetings. There was no IBM delegate on the US side. IBM told us that they set high values on the product quality, and would buy Japanese products if the products were good. IBM did not care about the trade conflict, but had a quality first policy.

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There were many Japanese semiconductor companies that sold a large quantity of products, and DRAMs in particular, to the US. We sold them a lot, but I think that happened because the US set high values on the product quality.

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**Myers:** I think I'll pick up on another question – you went into Hitachi, and what was your first semiconductor related assignment? First products and teams you worked with when you joined Hitachi.

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**Kimbara:** It would have to be transistors at the Takasaki plant. I was involved in the products of ordinary transistors, power transistors, and so forth.

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**Myers:** You make products for railroad cars and – did that affect your wedding in any way?

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**Kimbara:** At that time, I was involved in a controller, which used a rectifier using a power diode. It was a rectifier with the output of 3,000 kW. We delivered it to the Maibara transformer substation of the then National Railroad Corporation. They complained that the rectifier did not work well. The chief of the transformer substation contacted me in the city of Hitachi, Ibaraki-prefecture that there would be the Emperor's train passing through there. If the transformer substation would malfunction to cause a power failure, I would have been fired. He asked me to stay there paying attention to the rectifier until the Emperor's train would pass through without any trouble. That was his request. So I went there a month prior to my wedding ceremony. The Emperor's train passed through the substation about a week before the wedding ceremony and I got an Okay. So I returned from Maibara to Hitachi in Ibaraki three days prior to the wedding ceremony, and then went to Hamamatsu where I had a ceremony one day before the ceremony. It was a busy back-and-forth trip. How did you know about that?

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**Myers:** I read it. No I think it's an interesting story – I don't need to know it but to get it on the tape...very interesting because what we're trying to do is not only find out what you did, but your life around that, because it's like a quick view of your whole professional life, your personal life, and who you are as an individual. But I read that, and I thought, "He's going to prepare for his wedding, and the train company is saying his product's not working, and it has to work before the emperor comes by on the train." I hope you got that all into you. Boy. What year was that? What year did that happen – do you remember?

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**Kimbara:** That was Showa 32, which is 1957.

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**Myers:** Okay, well I thought that was a very interesting story because as we've all worked in the industry, we've had side stories how we work in the industry – all of us, and that's why I brought it up. So what were the key semiconductor related projects with which you've been associated with? What ones would you consider the key ones in your total career?

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**Kimbara:** Well, as the General Manager, I was not involved in product design and process design. For a decade from the next year when I became the general manager, the sales amount increased 10 times. I was fully engaged in management such as constructing factories and hiring new people.

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**Myers:** Why did your company, Hitachi, make the decision to focus on semiconductors? Because they were making lots of different things.

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**Kimbara:** Well, I do not have a good answer. Prior to making the decision of semiconductors, Hitachi had a corporate strategy of manufacturing all electric products. General Electric, GE, manufactured all products at that time. Hitachi attempted to produce all electrical products in order to catch up and exceed such company. I think that was the reason for starting semiconductors.

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**Myers:** In your opinion, what were the reasons for the major success of the Japanese semiconductor industry? They came and then got into semiconductors and were very successful. Looking at you, you were very successful, and so in your opinion, what was done at that time that make them very successful?

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**Kimbara:** There are two major reasons. One of them was the product quality after all. We set a high value on the product quality, and aimed to manufacture products without defects. This was one reason. The other reason was we responded to customers' demand. We constructed plans for fulfilling the demands and increased the production capacity. I think that was the second reason.

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To tell you the truth, I think we can say that the second reason became the cause of decline in the Japanese semiconductor industry.

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When I served as the Senior Managing Director of the semiconductor division, we used manufacturing devices with "mask" and we needed to use 24 to 25 of them for producing wafers of DRAMs, but Samsung and companies in Taiwan only use 16 to 17 of them, and with it they were able to obtain adequate product performance. The quantity of the devices were much less than what their customers estimated. They were able to cut the production cost by doing that. If you set too high value on the

product quality, the production cost will be too high. This is an issue. *{Translator: I think Kimbara was talking about masks.}*

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Another issue was how to satisfy the product specifications requested by customers. Japanese home appliance manufacturers and cell phone manufacturers used to produce their products as their customer companies requested. Japanese manufacturers did everything internally, from design to production. As the design process is getting more complicated for satisfying product specifications, the product cost became too high. Respecting customers' specifications was good, but that may hinder the business success.

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**Myers:** Did you use any of Dr. Deming's principles in Hitachi? Are you familiar with Dr. Deming's quality control and...?

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**Kimbara:** Oh yes, we did it thoroughly. Like an honors student, we followed the Deming's principle thoroughly, and we successfully improved our product qualities. That was very good, and we had positive outcomes.

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**Myers:** I thought so.

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**Kimbara:** The biggest issue was consistency of the product quality among various factories. We constructed many factories in various places, but the quality of DRAMs must be the same. We cannot accept different product qualities from five to six different factories. To achieve the objective, we relied on the Deming's principle very much.

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**Myers:** Yup. I used him also, years ago. What's appropriate for the Japanese companies in semiconductors in today's business, in your opinion? What should they do?

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**Kimbara:** That is an extremely difficult question to answer. One of our issues is the management issue. I think the issue is on management failure, frankly speaking. Including me, we failed management. The cause of failure was, I think, that we did it all by ourselves in one place, including design, production, and inspection. We constructed many small factories. That strategy cannot compete with the foundry systems in Taiwan. We were unable to beat their product costs.

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Now, Hitachi, NEC and Mitsubishi jointly founded a company called Renesas Electronics Corporation. With this, we are reducing factories from the beginning of this year until the end. We also reduced the number of employees. We are in the situation of desperately reducing the manufacturing cost by closing small factories while keeping large plants. They want to try to do something.

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**Myers:** Okay I think I have two final questions. What advice would you give to young engineers going into the semiconductor business, going into college – any advice and direction that you would like to see them have?

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**Kimbara:** Well, I would advise young students to study fundamental subjects. There are many new technologies coming out one after another. It is good to study the new technologies, but they will be replaced with others quickly. If you are just chasing the latest ones, you cannot comprehend them all. You need to have a firm fundamental knowledge. I believe that is the most important thing for young students.

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**Myers:** Like science and math?

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**Kimbara:** [in English] Yes.

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**Myers:** Okay and the final question – what do you think the opportunities are, and the most exciting opportunities in technologies in general, not just semiconductors? What does the future hold?

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**Kimbara:** I think technologies will change according to needs. In turn, the needs will be changed by human minds. In Japan, I think the technologies are primarily concerned with health care and medical technology and automobile technology now. I think we are aiming to establish a method for reducing loss of efficiency without exhausting harmful gases. I think these two technologies are our primary targets.

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**Myers:** The health, bioscience and automobile.

**Kimbara** [in English]: Yeah.

**Myers:** —I know I got involved briefly with – you know the subject of, Tani-san of hip replacements? Yeah, I don't have one but...

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**Kimbara:** One more thing is that as I often talk to young generations that the core of the Japanese industry is technological power of not only large companies, but also mid-size to small companies. The technological power I am talking about is the skillful technology. For example, a skill of utilizing various ITs – that kind of technological power is what I am talking about. Such skillful technology will be our core after all. As such, we need to think globally, not just about Japan and its domestic market. We do not have to think about made in Japan, USA, or Korea because there are many users worldwide and we need to supply products to them. We do not take Japanese products to overseas, but production overseas should be acceptable if we think about our business globally. Technological power and global thinking. I think these are the most important. I am telling the younger generation about such things.

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**Myers:** Yeah, the reason I ask you about hip replacement – I have a friend working in research in Los Angeles area out of UCLA, and they're working on, you know, most joint replacements are with titanium. They put it in, and they're finding that the body doesn't like titanium, but sapphire works very well. I don't know if you read about it. It's interesting the way science is changing, and as something like sapphire now in the future may be the hip replacement, not titanium. That's why I asked.

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**Kimbara:** I see. It is interesting. Indeed, there are many technological issues on medicine.

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**Myers:** Yeah, this is just a side comment though; cut it out probably. The opportunity now is for you, in any message, you want to give. It's an oral history of your career that we've tried to pull out from family, to the retirement time. Any message you'd like to add what we've talked about today?

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**Kimbara:** What I am impressed by is that the Computer Technology Museum is archiving many peoples' opinions in one place. When we review the archives, we would realize that there are so many issues coming out if that. I think the museum is a very wonderful idea.

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**Myers:** That's about it. Okay, well thank you very much.

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**Kimbara:** You are welcome and thank YOU very much.

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**Myers:** It's not easy I know with dual language, but we'll do our best, and we'll get the product back in rough form, and both you and I will be able to edit, and then finish it, and then put it online for people to read.

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**Kimbara:** [in English] Thank you.

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**Myers:** Thank you very much.

END OF INTERVIEW