Chapter 5

Establishment of US Design Center

A large personnel and organizational change was made in Hitachi Semiconductor Division in December 1976.
I already touched on the change of Division General Manager in the previous year from Yoshinobu Imamura to a person called Mr. A. He was transferred from the heavy electric machinery business division. As the Division GM, he aimed to change the basic organization from “business division centric” to the original “factory centric organization” which was the traditional Hitachi organizational scheme.
In Hitachi at the time, the heavy electric machinery sector such as generator business was the mainstream, and the basis of business was to make products faithfully according to the specifications presented from specific customers such as Tokyo Electric Power Co. Therefore “How to make?” - how to make high quality, low cost products in efficient manufacturing process – is the key to the business. Therefore “factory” traditionally carried the core role. On the other hand, in the semiconductor sector, customer base is widely spread and “What to make?” is more important. For that reason, the system had been changed in November 1969 to a business division centric organization which was an exception to the Hitachi system.
The new GM’s argument was that this exceptional organization of the Semiconductor Division was one of the causes of the deficit following the oil shock. The reorganization was carried out based on this concept, and it was decided to return to Hitachi’s traditional “factory centered system”. The IC development department that I was in charge of was also taken into the Musashi Works organization. Along with this change, I myself was also dismissed from the department manager position. It was to take responsibility for the deficit of the LSI business. It was the first set back I experienced since I joined the company, and I felt like falling from a high mountain to bottom of the valley.

At this time, a big trend change was occurring in the world semiconductor industry. The calculator market was hit by frequent model changes and price erosion due to intensification of so-called “calculator war”. Development of new models one after another was confronted with very short product life cycle, and it became difficult to follow this situation with custom LSI development scheme.
In contrast, application fields centered on standard products such as memories and microprocessors were gaining momentum, and here, emerging forces, such as Intel, were overwhelmingly leading. I felt strongly that there was something more to learn in the United States.
My new job after dismissal from the manager’s position was “strategic planning”, which was fortunately an organization directly under the Division GM. Soon after this appointment, I decided to make a proposal directly to the GM based on my thought that, “For the strategic planning job, it is difficult to open a good future prospect by simply staying domestically. I think we should have a base for gathering technical information within Silicon Valley in US.” Although I was ready to be

refused, it was “easier to do something than to worry about it”, and I got his response that “Why not studying a concrete plan?”, and I felt I saw a ray of hope.

First of all, I visited and asked for consultation with the planning department of Central Research Laboratories (CRL) on 23rd of December, 1976. At the time, CRL had their San Francisco Lab (SL) as a liaison office in Mountain View, California, and the planning department was in charge of its management. Six people including Yahiko Yamada, Inose, and Endo were stationed there, carrying out their investigation and research works. The half year budget was about ¥70M, and they also told me about the detailed expenses and so on.

In the case of Semiconductor Division, I found the expense budget could be about half of it, if we would start with 2 to 4 persons for the time being. As for the members for the start, we decided to elect one person from Semiconductor Division, and another from the Device Development Center (DDC). The place was set to be nearby CRL/SL and it was confirmed between the top executives that we would cooperate between us and CRL. As the new year started, Fumimaro Kawakatsu was selected as a permanent member from DDC, and we started to prepare for the establishment of a liaison office together.

Originally from the Totsuka Works, Kawakatsu was familiar with not only semiconductors but also communication systems, and he was the best choice for this kind of task with his knowledge in the variety of fields.

I visited Yahiko Yamada, the head of SL, with Kawakatsu in February, 1977 and could receive specific advises from him. For example, size and price of the office space, salary of a secretary, contractual agreement with research companies, and further about the preparation of telex terminals, telephones as communication means, office desks and fixtures, and so on, all new to me.

The base plan of the US operation was officially approved within Semiconductor Division, and the name was decided as HICAL (abbreviation for Hitachi California). Takuo Tsuiki was selected from Semiconductor Division to be stationed in US, and the preparation was almost completed.

Tsuiki had been engaged in calculator system technology, and he had a wide knowledge in the field of MOS logic. With his outgoing personality, he was best suited for this job. All the members, including secretary Terry Kelly, gathered at the HICAL office in Mountain View at the end of May.

June 1, 1977 was set as the establishment date of HICAL. I became the head of the office, and the activities started with four members, Kawakatsu, Tusiki, Terry and I. This is the predecessor of Hitachi Microsystems, Inc. (HMSI), which would become an important design base in the United States later. Photo 5.1 below was taken at the time when Susan joined us as the successor secretary to Terry.

Photo 5.1 Members of HICAL (to be HMSI later) in Mountain View, founded in June, 1977
From left to right: the author, Terry (the first secretary), Susan (the second secretary), and Kawakatsu.

I tried to build up human networks with the top personnel and to get their cooperation at the Stanford University, Dataquest, Gnostic Strategy, Creative Strategy (they were semiconductor research companies), and others. Kawakatsu was responsible for general accounting as well as focusing mainly on investigating trends in memory field, and Tsuiki was mainly responsible for investigating the technical trends of microprocessor.
With three of us sharing our roles, we attended semiconductor conferences, seminars and lecture meetings, and also contacted newly coming semiconductor technology ventures to firm up our preparation for the future. Among them were Osbourne Associates (a consultant of the microprocessor, in particular in favor of 6800 series), Pico Design (a company of LSI design service), MosAid (a memory technical consultant, especially strong in DRAM), and others. Photo 5.2 was taken when we visited Osborne.

Photo 5.2 Visit to Osbourne Associates, Inc. (Microprocessor Consultant)
From left to right, Tsuiki, President Osborne, the author

Also at Stanford University, by the arrangement of Professor Linvill who had been my teacher in my Stanford days, we started a consigned research of microprocessor applications, and a joint research was started with Professor Garland from Stanford and Tsuiki from our side.
Its just an aside, but Tsuiki received a special right to play any time at Stanford Golf Club known as a distinguished course, and I also played there several times because Tsuiki could invite guests. The play fee was only 3 dollars, exceptionally low even at that time.
It is Susan who was the second secretary that remains in my memory of HICALs days even now. She did good jobs, while having good sense of humor and a respectful personality. She still kept a trace at that time of having been elected Miss Palo Alto in her young age. In addition, she had almost professional skills in golf, and our golf talks bounced from time to time, and she gave me various tricks in golf. She said one day, “Dr. Makimoto, let me tell you only one thing important in golf.” “Do not head up. You should be okay if you keep this point!” In addition, “Work is also the same, isnt it?” with a big laughter. I had many fun times by her preeminent humors. I would say she was one of the important contributors who put HICAL on track.
HICAL regularly and irregularly summarized the survey results and made reports as “HICAL report” which we sent to the executive management of our Division via Marketing Section with Kanamaru as a manager reporting to me.
I was keen on compiling the semiconductor trends in the US in an easy-to-understand manner for executives, and I tried to draw their attention to the trend of large industrial structure change, not limited to individual and superficial moves. In particular, I focused to the information related to memory and microprocessor, and emphasized their importance.

It maybe that these reports moved executives, and a sudden personnel change was made soon after the HICAL started. “Memory & Microprocessor Design Group” (abbreviated name, MMD) was newly established in the Musashi Works organization, and I was appointed the Group Head. For the time being, it was a form concurrently serving as Director of HICAL. It was only 8 months since the dismissal from the Dept. Manager, and it was unthinkable with Hitachi’s common sense at the time. I later learned that Shotaro Shibata, then GM of the Musashi Works, was the one who promoted this personnel matter. He, knowing the difficulty of semiconductor business, strongly recommended that “This position can be managed only by Makimoto” to the new Division GM from the heavy electric machinery division, and this unprecedented personnel change was realized.
It is an unforgettable personal bond, and I think that my semiconductor life would have been completely different one without it. I strongly felt an elevation in my mind that aroused me that I was given the opportunity to challenge to memory and microprocessor which would be the main battlefield of the semiconductor.
Well, the newly established MMD was a start from the state of infant walk. The main design departments at the time were the First Design Department with about 200 members in charge of MOS devices, and the Second Design Department with about 100 members in charge of bipolar devices. In comparison, MMD was a household with fewer than 20 members, about one tenth of the First Design Department. However, there was a firm sense of mission with this group of selected few to work on memory and microprocessor which were the key developing fields, and they did their best in high spirit. The expression “aiming for clouds on the top of a hill”(a famous

Japanese novel describing the momentum of young modernized Japan in Meiji era in the war against Russia) might have been the most suitable. At this point it was a small household which was too small to be called “Department”, but in February, 1978 the team was strengthened somewhat and it formally got the name of the Third Design Department”. I also recovered the title of “Department Manager” after one year from the dismissal. From this point on I would be concentrating on the Department Manager job and handed the button of Head of HICAL to Kawakatsu.

I would like to mention briefly the subsequent changes of HICAL. Kawakatsu worked on making HICAL a formal company in US from a liaison office and realized it, with the name of HMSI or Hitachi Micro Systems International, and he became the first president of the company. Following him, Kunio Nakano became the president in 1980, followed by Kosei Nomiya in 1984, and Tokumasa Yasui in 1987.
At the time of President Yasui, the 10th anniversary of HMSI foundation was held, and I also participated in it. At that time, I was GM of the Takasaki Works, and Yasui gave me a special invitation as “HMSI Founder”.
Well, turning to the subject, Yasui recently gave me a brochure which was prepared at the time of HMSI 10th anniversary. I happened to find my congratulatory address to HMSI people in the brochure.
Extracting only a part of it, it says, “To see HMSI grows is like seeing my child grows. ---- When HMSI was founded in 1977, the product structure was changed from custom to standard product. --- The semiconductor industry is turning around again, from standard to custom product such as ASIC. ---”
This content is something of an insight of the concept introduced as “Makimoto’s Wave” by Electronics Weekly in 1991, four years later from the 10th anniversary. I remember that I got this idea around 1987 when I was transferred to the Takasaki Works, but I think that it is probably only this congratulatory address that remains as a clear writing. I am pleased that I was able to find this valuable material by chance.
As a successor to Yasui, Yoshikazu Hatsukano managed the company for a long time from 1991 through 98. Peter Clark took the office after him and management localization was promoted. He served until the company was merged with the sales group.

Meanwhile, HMSI’s business scope has also expanded from technology research operations center to design and development areas, and also played an important role in “product definition”. In other words, it grew up in a way that led the whole business division as a US design base of Hitachi semiconductor. Especially with regard to microprocessors, excellent engineers gathered at HMSI and it became a center of important projects.
For example, the CMOS 16-bit microprocessor (63000) which was developed by HMSI in 1983 became an epoch-making product as the world’s first CMOS 16-bit product. It also made an important contribution to the development of CMOS/BiCMOS cache memories and the development of SH-DSP which integrated SH microprocessor and DSP functions on the same chip. However, the most important roleplayed by HMSI was the project with Microsoft to install

Windows CE(*), OS for consumer field, in SH microprocessor, which was started in 1994. HMSI's Tony Moroyan created the opportunity for joint development, and HMSI became the centerpiece of Hitachi side during the actual development process.
Windows CE expanded and strengthened the foundation of SH microprocessor, and made a great contribution to make it known widely in the industry, and I will revisit on this subject later.
(*) Windows CE is a trade mark of Microsoft.

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