

Invited**SSDM 30th Anniversary Memorial Talk, Past, Present and Future of Solid State Devices**

Shoji TANAKA

Superconductivity Research Laboratory

International Superconductivity Technology Center

1-10-13 Shinonome, Koto-ku, Tokyo 135-0062, JAPAN

Phone +81-3-3536-5700 FAX + 81-3536-5717

e-mail address: tanaka@istec.or.jp

In the decade from 1965 to 1975, many important breakthroughs occurred in the field of solid state electronics ; IBM 360 appeared in 1965 and was going to dominate the world market of computers, and the logic circuits were consist of integrated silicon devices. This indicated the importance of the silicon integrated circuits in computer technology, which was recognized as the leading technology in coming future.

Furthermore, the first MOS DRAM of 1024 bits in 1970, and the first 4-bits microprocessor in 1972 appeared to the market by Intel.

And the high efficiency laser diode having double hetro-junction structure was discovered by Bell Lab. in 1970.

At around 1965, the technologies of solid state devices in Japan were far behind that of the United States and many Japanese engineers were very eager to catch up it as quick as possible. In 1967, late Professor Arizumi of the Nagoya University and late Professor Aoki of the University of Tokyo came to see me and discussed how to excite Japanese engineers in the field of the solid state electronics, and we concluded that we had to organize new conference, in which only high quality papers are selected, and the formal language is English in order to introduce the international character.

Then we decided to hold the 1st Conference in 1969 and the late Professor Arizumi became the chairman of the Organizing Committee, the late Professor Aoki the chairman of the Steering Committee and I became the chairman of the Programm Committee from the 1st to 5 th Conference . Until 1972, in which the 4th Conference was held , the Conference was domestic and only a few foreign engineers were invited. In those five years, the activity of Japanese group increased remarkably, and then we decided the 5th Conference in 1973 to be real international one. Then we sent invitations to outstanding people in the world and fortunately most of them accepted and gave us very exciting talks. Names of invited speakers were ; Dr. Triebwasser (IBM), Dr.Lepselter (Bell), Dr.Dean (Royal Radar), Dr.Tien (Bell), Dr.Quate (Stanford), Dr.Smith (Bell), Dr.Grove (Intel), Dr.Kooi(Philips), Dr.Esaki(IBM), Dr. MacRae(Linclon Lab.) and so on.

The figure was shown by Dr.Triebwasser and it showed the status of technology fairly well at that time. In the talk of Dr.Grove, many Japanese engineers gathered in the lecture room and they were very much excited on newly developed 1024 bits DRAM and they asked so many questions that Dr. Grove was embarrassed about that.

Thus I think that the modern solid state electronics of the international sense was born in the 5th Conference in Japan in 1973, just 25 years ago.

Since then, the solid state device technologies as well as information technologies and communication technologies developed explosively and in the late 1980's the information revolution has come to cover all over the world.

However, the saturation in the trends of those technologies might be seen at around the year of 2005, and the task of this conference must become very important to create some breakthroughs in coming ten years.

HISTORY OF COMPUTER TECHNOLOGIES

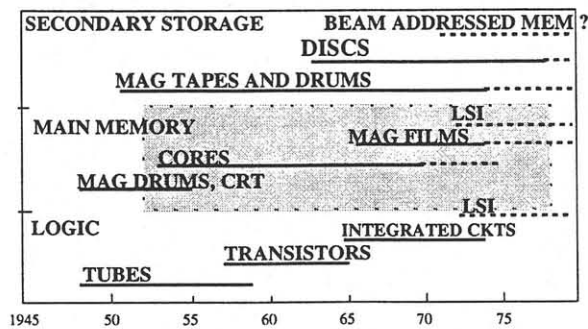


Fig.1 Composite history of computer technologies ; by S.Triebwasser ; Proc.5th ISSDM, P3 (1974)