THE HISTORY OF M-3, THE FIRST HUNGARIAN ELECTRONIC DIGITAL TUBE COMPUTER

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The M-3 computer was constructed by members of the Cybernetics Research Group of the Hungarian Academy of Sciences (Magyar Tudományos Akadémia Kibernetikai Kutató Csoportja, abbr. MTA KKCs) from 1957 until 1959. I was the member of MTA KKCs until 1967. The Group was established for the sole purpose of constructing the first Hungarian electronic tube computer, the M-3. The M-3 was and still is the symbol for the beginning of the age of computers in Hungary.

1. THE M-3 STORY

The Cybernetics Research Group of the Hungarian Academy of Sciences (MTA KKCs) was initially launched as a department of the Measurement Industry Research Institute (Műszeripari Kutató Intézet) in 1955, headed by Dr. Rezső Tarján. He was earlier imprisoned politically and became free during this time, together with his two colleagues: József Hatvany and Dr. László Edelényi. They started to construct an electronic – EDVAC like – serial computer in the prison, its name was: B-1.

In 1956 this department became an independent research group of the Hungarian Academy of Sciences under the direction of Mr Sándor Varga, earlier a Soviet emigrant. Dr Rezső Tarján was appointed to the Scientific Deputy Director of the Research Group.

The main task of this Research Group was to follow the construction of the first Hungarian electronic computer. The group, the new youngest members of which just finished University of Sciences and Technology (mathematicians and engineers) – I belonged to this category too – followed the construction of the self-constructed computer, B-1, but this activities were not really successful.

Because Mr Sándor Varga wanted to construct a computer as soon as possible, he acquired the logic and the constructional designs of a new developed Soviet (Russian) medium size computer, named M-3. We received the original Soviet design in Budapest which had not yet been constructed and tested, therefore the members of our group (me too), had to correct – step by step - about 10-30 % of the logic and constructional design of the electronics.

The result of this work was that our version of the M-3 featured a lot of new solutions, such as, a part of the arithmetic unit, some new instructions of the instruction set, the magnetic drum controller, the input/output devices etc. It is interesting, the original Soviet M-3 design was given to a research group of Estonia and of China, they constructed own M-3 computers, but we did not have any scientific connections, therefore these four M-3 computers – the Soviet, the Estonian, the

Chinese and the Hungarian – were not compatible each-other, we could not change any software between us, but – during this time – we believed, it was not necessary for us. We did not recognise the importance of the compatibility and the change of the software.

In the first version of M-3 we used Russian tubes and kuprox diodes, later - in about 1960 - the Group decided to rebuild a part of the logic circuits – first the drum controller, then other parts of M-3, with Hungarian long-life tubes made by Tungsram were used.

The developing group was headed by Dr Bálint Dömölki a young mathematician and I was appointed to his deputy. I was responsible to instruct the electronic engineering activities.

The acceptance test of M-3 was conducted and successfully concluded on January 21, 1959, in the presence of Mr. G. P. Lopato, chief constructor of the Soviet M-3.

After the successful acceptance tests, our mathematicians and economists solved several problems on the new computer not only scientific domains, but also on the technical and economic life as a number of experts: engineers, economists, mathematicians, linguists and many others started to study computer programming using the machine on their own fields of study. Already in the first few moths of the operation of M-3 calculations for some sections of the so important 5 years economical plans of the socialist planned economy, important operations research tasks, lingual statistics analyses, static calculations for a number of large building constructions, like the longest bridge - the Elisabeth Bridge - over the Danube, and many other tasks had been carried out by this machine.

Our Research Group organised the first programming courses in Hungary, we published the first computer periodical, its title was: “Tájékoztató” (Informatory). Our mathematicians suggested the organisation of a new computer programming faculty on the University of Sciences.

Our colleague Dr Béla Kreko suggested and started an other new faculty in the University of Economics: “Planing and Economics” in, where the students are learning economics, mathematics and computer science – first in the history of the Hungarian Universities (1960). I was invited to organise and teach this subject matter about computers. I wrote the first university learning book about the computers, too. We - Dr Kreko and me - organised the first university-computer centre – using an URAL 2 computer - on this university, too (1965).

When M-3 was successfully tested and accepted by the Hungarian Academy of Sciences (1959), Mr Varga ordered to set up within the framework of MTA KKCs the first Computer Centre in Hungary. This Centre had a Computer Operations Department it was headed by me, too. We started to work very soon in three shifts, we were running programs, the operation was interrupting in every 8 hours, only for maintenance purposes. Because the relatively short life time of the tubes, they needed to be changed every two-four weeks.

The members of the different research institutions and universities – coming to our Computer Centre - solved a lot of mathematical, economical and technical tasks on our computer, it was the first opportunity for the scientific researchers using an electronic computer in Hungary.

M-3 operated at the Hungarian Academy of Sciences’ Computer Centre till 1965, when the M-3 computer was transferred to the Cybernetics Laboratory of the József Attila University of Sciences, Szeged, which was headed by Academician László Kalmár, Professor of Mathematics and Logic in

the University. It was the first Computer Centre in country-side, too. The head of the University's Computer Centre was Dr Dániel Muszka.

In 1968 the M-3 became outdated, the computer was disassembled and the parts of the M-3 were then distributed among the various institutes of the university.

The greatest consequence of the development of M-3 was the very early introduction of computer culture to the Hungarian scientific and research community. (See [1] – [13].)The M-3 was and still is the symbol for the beginning of the age of computers in Hungary.

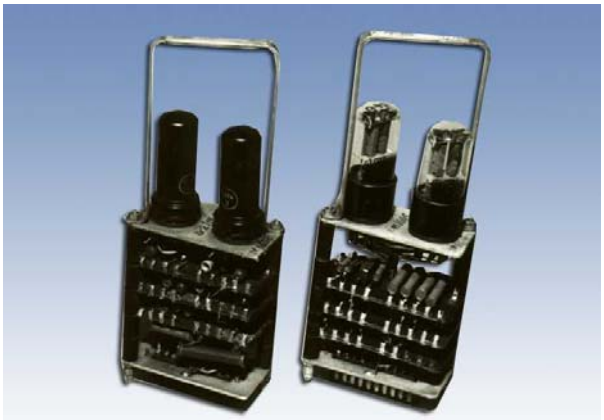
2. ORIGINAL PHOTOS OF THE M-3 COMPUTER

The engineering Group of the M-3:

Form left to right: Pohradszky, S., – later: Röhrich, A., – Ábrahám, I., Molnár, I., Szanyi, L., Kovács, Gy., Várkonyi, Zs., Dömölki, B., (Kardos, K., in the shadow, behind Dömölki)

The drum memory of the M-3 (It had 1 – one - kwords capacity – about 4,5 kByte)

Original logic units of the computer (left to right: first, two combined gates, second, two flip-flops)



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