Lecture 8: Addendum

What Does The MCM/70 Story Tell Us?

- It was the introduction of Intel's first microprocessors that triggered worldwide efforts to commercially develop personal computers (in Canada, France, and the US).

- The historical mission of the creation of the first microprocessor-powered PCs was fulfilled by small, obscure electronic firms (such as Micro Computer Machines of Toronto or a small French electronic systems house Réalisations et Études Électroniques (R2E)) as well as by the computer hobbyists' movement of the mid 1970s – the subject of the next lecture.

- From the start, it was clear to the MCM management that the microprocessor technology would create a new computing paradigm based on individual use and ownership of computers.

Fig. 1. The MCM/70 computer designed and manufactured by the Toronto-based Micro Computer Machines (1973). Source: York University Computer Museum; photograph by Paul Stachniak.

The microprocessor and the PC

The advent of the microprocessor had a profound impact on the consumer electronic market (e.g. pocket calculators and digital watches) and on the creation of the personal computer industry.

Mers Kutt's knowledge about the microprocessor developments at Intel allowed his company (Micro Computer Machines) to start its work on the world's first PC even before the Intel's chip (the Intel 8008) was available commercially.

As the former MCM software engineer Gordon Ramer explained,

> *In designing the MCM/70 we totally bet on the emerging microprocessor technology, we just proceeded, even before the first [8 bit] microprocessor was built.*

The microprocessor was a radically new electronic device whose effectiveness in implementing computer equipment surprised many engineers. As the former MCM hardware engineer José Laraya recollected:

> *Mers [Kutt] brought it [the microprocessor] in and said 'here, see what it does'. It was really computing, it really did things, one little chip... I was very impressed with what Intel had done with the chip and I wanted to be one of the first to put together a processor [computer] with it.*

And indeed he would become one of the very first engineers to build a general purpose computer powered by a microprocessor. It was Laraya who designed most of the MCM/70's hardware.

The MCM/70 and the new personal computing paradigm

MCM was possibly the earliest company to fully recognize, articulate, and act upon the immense potential of microprocessor technology for the development of a new generation of cost-effective, individual user-oriented computing systems – personal computers.

> *There seems little doubt that Canada has stolen an early world lead in the new era of 'distributed processing' which will bring the dream of a computer in every home and office closer to reality.* [Electronics Communicator, 1973]

In spite of the many ways in which one might render the term 'personal computer', the present day personal computing reality is the consequence of the invention of the microprocessor and of the rapidly growing demand for public access to interactive computing in the 1970s. Already in 1973, Mers Kutt professed that

> *in the coming years, the computer field is going to be made up of millions of small computers and a limited number if large computers... With that trend developing, the MCM/70 could, in a few years, become as familiar as calculators are today.* [1973]

Fig. 2. Mers Kutt shows Kim Edwards how to play with the MCM/70. Source: The Toronto Star, September 27, 1973; photograph by Keith Beat.

The first glimpse of a new PC reality

The "Small Canadian", as the MCM/70 was referred to by some media in Europe, awakened society to the real possibility of universal and affordable access to computing in the not-so-distant future. Indeed, a compact, all-in-one MCM/70 displayed next to a refrigerator-sized minicomputer during a computer show provided the first glimpse of a new computing paradigm based on individual use and ownership.

Fig. 3. Faked image of IBM executives comparing the MCM/70 to the company's 7090 mainframe computer.

Welcome to the computer age!

In 1973, MCM promoted its computer as having such size, price, and easy-of-use as to bring personal computer ownership to business, education, and scientific users.

MCM also used its advertising to explain why the general public was prevented from personal use and ownership of computers:

> *It has been a combination of the complexity of the large computer machines and the complexity of the special computer languages, that has till now prevented the general public from using computers themselves. But the simplicity of the MCM/70 and its associated computer language (known as APL) make personal computer use and ownership a reality.* [MCM, 1973]

In terms of public acceptance of new computers, MCM believed that the personal computer would be as successful as pocket calculator:

> *The MCM/70 ...brings to the world of computing what the $100 hand-held calculator brought to the world of calculators.* [Machine Design, Nov. 1973]

It was expected that the overwhelming acceptance of PCs would be the result of their unlimited use in areas such as:

- business,
- research, engineering,
- actuarial, chartered accountancy,
- education (see below).

The MCM/70 Classroom concept: equipped with from 15 to 30 MCM/70s for individual use by students and with three to six printers to be shared by students [1973].

Early commercial PCs elsewhere: the R2E Micral

In February 1973, Réalisations et Études Électroniques (R2E) of Paris announced its small, microprocessor-based computer called Micral. In fact the Micral used the same microprocessor as the MCM/70. Although the Micral was not a PC but an inexpensive, transportable, and programmable control system, the Micral's impact on future computer developments (such as education) in France and other countries was very significant.

In early 1974, R2E released its new Micral–the Micral S–which was designed for personal use.

Fig. 4. R2E's Micral S computer (1973). Source: unknown.

The Canadian MCM/70, the French R2E, and the American Scelbi-8B, all introduced between 1973 and 1974, demonstrate how wide spread and universal the idea of a computer owned and operated by an individual was. To be realized, the idea of the PC was waiting for a technological breakthrough that would reduce not only the size and energy consumption but, most of all, the cost.

In less than a decade from the introduction of the microprocessor, millions of people in North America alone owned a personal or home computer.

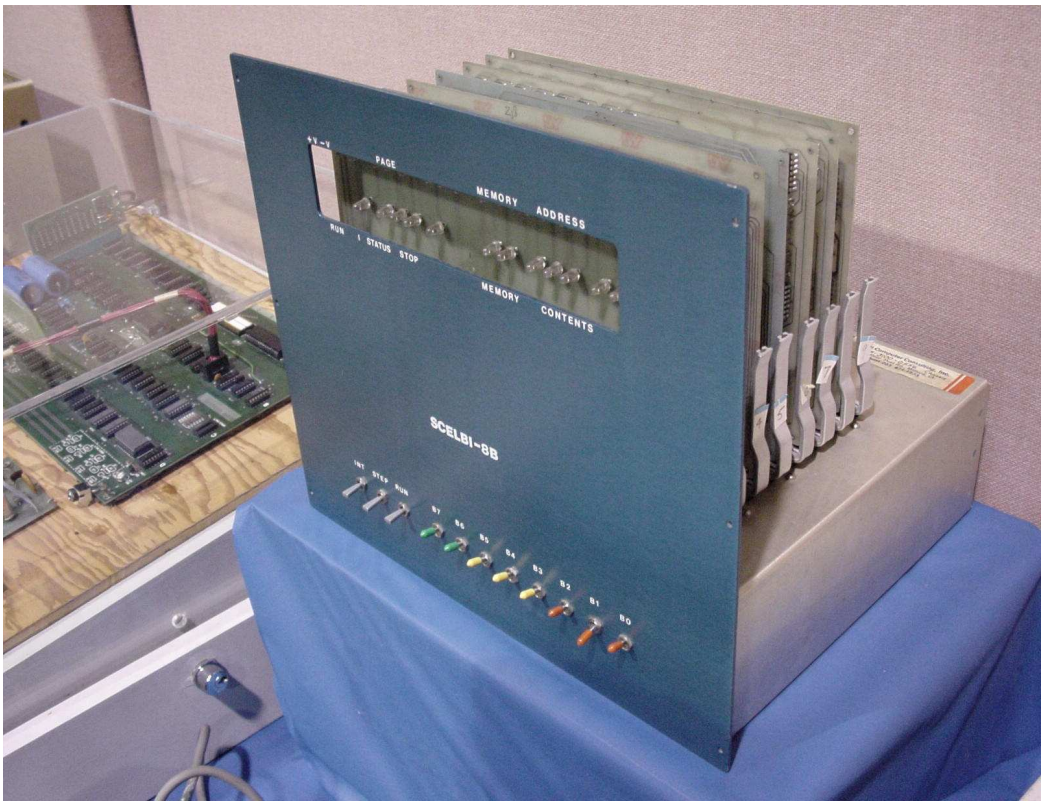

Fig. 5. The Scelbi-8B computer (right, 1974) and Apple I (left, 1976). Source: photograph by Z. Stachniak