

A Hidden Treasure on Computer Science Pre-History in Pisa: the CSCE Collection

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Abstract

The collection of the Center for the Study of Electronic Computers (CSCE) contains the scientific documentation produced by the staff and associate members of the Center. The CSCE was established by the University of Pisa with the specific purpose of designing and building the first electronic computer entirely built in Italy: the CEP, standing for "Pisan Electronic Computer". In recent times we have carried out the analysis, the description and the digitization of these historical documents, stored in paper copy at our library, and turned them into an Open Access digital archive freely available at <http://csce.isti.cnr.it/>.

The most important historical events

The history of the CSCE started at the beginning of the '50s, when the municipal and provincial administrations of Pisa, Lucca and Livorno granted the University of Pisa a significant amount of money (150 million liras) to be used for the realization of an important scientific device. The original idea was to build an electrosynchrotron. The studies about the construction of this electrosynchrotron began in February 1953 at the Institute of Physics of the University of Pisa, and were about to finish when a bid by the University of Rome, one of the project partners, to have the project transferred to Frascati, near Rome, was accepted; this transfer meant that the amount originally granted to the University of Pisa became available for a new project.

In 1954, Marcello Conversi, director of the Institute of Physics, along with other researchers from the same institute, approached the Nobel laureate Enrico Fermi at the Varenna Summer International School of Physics "A. Volta" to seek advice on how best to use the unused grant. Enrico Fermi suggested to the Rector of the University of Pisa that the amount should be used to realize an electronic computer, the first entirely built in Italy. At that time, in Italy there were only two electronic computers, both purchased from abroad: the CRC102A, made in the US and installed in Milan at the Institute of General Electrotechnics in 1954, and the MARK I STAR, made in the UK and installed in Rome at IAC (standing for Institute for Calculus Applications) in 1955. In the opinion of Fermi, the hypothesis "to build an electronic computer in Pisa - seemed by far the best among all the others. It would be a research tool that would benefit all the sciences and all research in an almost inestimable way."¹

The recommendation of Fermi raised some doubts because the academic community claimed that the building of electronic computers was an exclusive job of the industry, and that the money would thus best be employed by buying a computer rather than by building it.

At the end, the choice fell on the route that was longer and more difficult, albeit more captivating and rich of satisfactions: building a computer. The CSCE was established in 1955 and the project started. The enterprise was financed also by the National Institute of Nuclear Physics, by the National Committee for Nuclear Research, by the National Research Council and by the society Olivetti, which participated with its own staff.

Before starting the real construction of the CEP, standing for "Pisan Electronic Computer", the executive group of CSCE decided to build a reduced-functionality prototype ("Reduced Machine" - RM). The RM was completed in 1957. Its main features were:

- word length of 18 bits
- magnetic core memory of 1024 words (1K)
- fixed-point arithmetic
- 32 machine instructions
- 70,000 additions or 500 multiplications per second
- photoelectric tape reader as the input device and teletype as the output

