

Booth's Computer at UCL (circa 1955)

It was in the 1954-55 session, my final year as a physics undergraduate at UCL, that Professor Harrie Massey announced to us, "Dr Booth is building us a computer, and if you want to see it, go up to the top floor." So I went up, on my own, and found a door marked "Computers". I knocked, and a female voice said, "Come in." On entering, I found three women seated at desks with pencils, tabulating pads and extra large hand-operated Brunsviga calculators. (Just as the first typists were known as "typewriters" and what we subsequently called "typewriters" were known as "typewriting machines", so these women were "computers" and their calculators were "computing machines" – a terminology that lives on in the name of the Association for Computing Machinery.)

One of the women, Elizabeth Lawson, directed me to an unmarked door across the corridor, where I found her husband, Tom, in a white lab coat, soldering iron in hand, at a 19-inch "Post Office" rack. Just another rack of electronics, then, and nothing else to see as yet. I thought of his wife in the room opposite, "He's going to make her redundant". Fast forward to 1973, when I joined the Birkbeck staff and met up with Professor John Hasted, who had been a physics lecturer at UCL in my time there. That computer of Booth's came up in conversation; Hasted said that he had been to a course on how to program it, but he never had any cause to use it.

I don't know anyone who actually did use it, but in 1958, when I was trying to finish my PhD in Nuclear Physics, I found that the calculations for one experimental observation took an hour using a hand-operated calculator, and I didn't have that much time because of my liability for military service if I didn't complete in three years. Someone suggested, not the departmental computer but the new Ferranti Mercury computer in Gordon Square (eventually superseded by Atlas), and I was back on target.

The Exit from Mary Ward House (1973)

Having been an MSc student at Birkbeck before I joined the staff in June 1973, I though I knew my way around the basement of Mary Ward House, but had no idea how much old hardware was there. The move to the main building was regarded as an opportunity to dispose of it, and I was assigned that task. I remember boxes of identical circuit boards with large resistors, some of them wire-wound, indicating considerable electrical power consumption; a box of "Post Office" relays, indicating some dependence on electro-mechanical rather than purely electronic solutions; transistors on B7G valve bases, indicating doubts as to their life; hundreds of unused 0A81 diodes – I've no idea of how these would have been used; and a drum memory. Unfortunately I did not know that by 1998, the fiftieth anniversary of the first stored-program computer, there would be so much interest in computer conservation, so I'm afraid nearly everything was dumped (this was before the Waste Electronics Disposal Directive!), most of it immediately, but some via my garden shed in the hope of being able to cannibalise some of the components.

The members of the Department of Computer Science who were not privileged to have offices in 10 Gower Street spent a year "camped out" in a large room on the first floor of the main building, which had been vacated when Geography moved to Gresse Street. It was not until 1974 that 12 Gower Street became available and the move was completed, and the "encampment" became part of the Library.

Departmental Computers

As part of the move from Mary Ward House we had been given Room 114 on the first floor of the main building as our Computer Laboratory, and here we set up the DEC PDP-15 which the Department had acquired in 1970. It was here that on Friday 13 July 1973, as our contribution to the Open Day marking the College's 150th Anniversary Session. The then Minister of Education, Mrs Margaret Thatcher, was one of the Distinguished Visitors. On entering Room 114, she asked Professor Peter King, who was accompanying her, "Why haven't you got British computers?" (I didn't catch Peter's reply!)

The PDP-15 used DECTapes, 3/4" direct-access magnetic tapes. Brilliant as they were, they were slow, and we needed a hard disk. DEC suggested that we upgrade to a PDP-15/76 by adding a PDP-11 with a hard disk which would act as a peripheral controller, and on 4 April 1974 some of us went to Martlesham in Suffolk to see one in action. The upgrade was duly ordered and installed, though not until the PDP-15 was upgraded to the current engineering change status, and in due course the PDP-15/76 made its way to 12 Gower Street.

Although individual departments at Birkbeck (e.g. Physics and Psychology as well as Computer Science) had their own computers, there was no college computer until 1982. Access to the University of London Computer Centre in Guilford Street was via a CDC 200 User Terminal, which allowed users to submit batch jobs on cards to the CDC 6600 and 7600 computers at ULCC and get their results back on the line printer attached to the terminal. Birkbeck Central Computing Services were subsequently able to replace the 200 User Terminal with a programmable terminal which could emulate either the 200 User Terminal or an IBM HASP workstation, the latter configuration allowing jobs to be submitted to the IBM 360 at UCL. The 200 User Terminal was then moved into Room 114, where it languished until we were able to extend the PDP-11 software to provide not only a hard disk but a line printer on the PDP-15/76. Both the PDP-15/76 and the CDC 200 User terminal found their way eventually to 12 Gower Street, where the 200 User Terminal reverted to its original function.

The PDP-15 and the 200 User Terminal never made it to Senate House in the summer of 1980, but the PDP-11 enjoyed a brief existence as a stand-alone machine running either single-user Unix or RTL. We were subsequently provided with a departmental PDP-11/34 which allowed multi-user Unix, and after the move to Senate House in 1980 a PDP-11/44 which enabled as many as 16 users to run Unix simultaneously. In 1984 the Department of Computer Science became host to the College's DEC VAX machine. By this time new packet-switching software made it possible for users to access any of the University's computers from around the world.

Our first microprocessor purchase was a Motorola M6800 machine with just 512 bytes of RAM and a teletype driver in 128 bytes of RAM which enabled programs to be stored on and loaded from paper tape, with a cross-assembler to prepare programs which it was too tedious to key directly into the machine. A subsequent purchase was an Intel 8008 in a brief case, the circuit board incorporating analogue/digital and digital/analogue converters which interfaced to analogue devices such as a motor with a fan and a sectored disk, a loudspeaker, and a thermistor, making possible such applications as speed and temperature control, and the playing of music.

From 1978 John Florentin and I were doing a lot of work with commercial partners using Wang hardware, and were able to persuade the SERC (as it was then) to give us a Wang 2200 microcomputer, which for a year or two meant that we didn't have to trek all over London – in some cases out to Northwood Hills – to get a few hours on a Wang minicomputer. Eventually, however, that micro became redundant was our partner moved over to Wang VS machines.

For teaching purposes we bought four CP/M machines, which were in some respects the fore-runners of the IBM PC. We also had a dial-up teletext television set and were able to advertise the Department's course on BT's Prestel service (invented by Sam Fedida, a former MSc student in the Department).

Courses run by the Department

Peter King joined the Department as its Head and Professor of Computer Science in January 1970. Until that time the major course in the Department was the MSc in Computer Science, in which Numerical Analysis played a major part. Peter immediately re-oriented the Department towards commercial data processing, introducing new modules such as System Analysis and Programming Languages, with Algol and COBOL as the languages to be learned by all students. In October 1970 I was one of the first intake into this new look course.

When I joined the staff of the Department in June 1973 use was made of my previous experience by putting me in charge of the Computer Laboratory and getting me to lecture on Hardware Component Appreciation and on the technical aspects of Data Communications Theory. Later on I also lectured on Operating Systems to the new Postgraduate Diploma in Computer Science, for which I was to act as course tutor responsible for admissions, examinations and the general running of the course. Peter asked me what I would do to guarantee the standard of the course, and I said it should be judged by those who fail – meaning that we should not lower the pass level to make sure that most if not all of the students would attain it – and of the initial intake of six students, only one passed the first year. By the 1980s, however, almost all the intake, both full-time and part-time, had 2:1 degrees, and we were able to get SERC Studentships for all the eligible full-time studentships.

The thinking behind the Postgraduate Diploma was based on the growing emergence of first degrees in Computer Science, as a consequence of which it was decided to make the MSc a genuinely postgraduate course and run a conversion course for the Diploma. A corollary was to withdraw from involvement in the BSc degree, with Basic Computer Science being taught by members of the Mathematics Department. This proved to be a pyrrhic victory as, when the Mathematics Department was closed some ten years later, the members of staff concerned were transferred to Computer Science ...

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