

Birkbeck Computing @ 50

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I joined the Birkbeck College Department of Computing at the beginning of 1972. I first entered the field of computing in 1957 at E.M.I. Electronics, where I was working as an electronics engineer. Subsequently, I worked both in the nascent computer industry and also in university lecturing in Britain, the United States and Canada.

Computing is an applied discipline, it exists to enable activities outside itself. At the beginning of the 1960's it was most prominent in advancing, and eventually revolutionising, scientific and engineering calculations. But, by the end of the 1960's it was apparent that its greatest potential was in business and government administration. Advances in scientific and engineering calculations were built on the deep foundations laid-down 300 years earlier by Isaac Newton, but business administration could only look back to the technique of double entry book keeping which began in Northern Italy in the 16th century. Double entry book keeping was not an adequate foundation on which to build the enormous edifice which we could dimly envisage. Underlying the ad hoc use of computers in business and government, it seemed clear that there were profound principles based on the idea of processing information. Information processing started with the bureaucrats of ancient Mesopotamia writing royal records on clay tablets 2,700 years ago, but up to the end of the 19th Century there was still only a hazy notion of its underlying principles; uncovering those principles would be worthwhile and exciting.

At the end of the 1960's I felt it would be ideal, somehow, to combine a university post with a practical involvement in the emergence of computing in administration. I wanted to gather real experience, and then to analyse and codify that experience in the setting of university teaching. It seemed impossible to lead this double life; most universities saw computing as an outgrowth from mathematics, or electrical engineering, not from a machine form of information handling. At some time during the late 1960's I had a conversation with Professor Peter King who had just been appointed to the Chair of Computer Science at Birkbeck. I was surprised, and gratified, to find that he shared this vision of embarking on the road towards a deep understanding of information processing. I was in Canada during 1971, but after a simple letter from Peter King, I returned to London to join him at Birkbeck.

The Birkbeck Department of Computer Science had some impressive advantages. The early work of Andrew Booth had established Birkbeck as a serious centre for research in computing. There was just one course - the part-time M.Sc. taught in the evening, this left the lecturers time for outside experience. The students on the M.Sc. course were mainly working in the new commercial data processing computer installations in the banks, insurance companies, and large companies based in London, particularly in the City. There was little, or no, preparatory professional education and training for staff in these computer centres. Some professionally qualified staff were recruited from a background in the rigorous physical science university courses which existed at that time; but many other staff had graduated in subjects like psychology and English. The more thoughtful felt that they needed some systematic understanding to underpin their daily work. It was challenging to teach these students a subject whose outlines were only then becoming visible. Many of these students had been bright pupils on the high standard British courses of those days, so lecturers faced very exacting questions and questioners. Many students worked daily on computing machines which were far more advanced than those available in universities, so that lecturers would often gather knowledge of the latest machinery from their students. Young people could see

the future; they flocked to join the M.Sc. course, and Peter King struggled to keep the student staff ratio down to 13:1, against the recommended maximum of 10:1.

At all times Peter King was an inspiring and supportive leader. It was not an easy task to unravel the principles of a completely new subject whilst carrying all the responsibilities, and duties of a Head of a busy, and growing, Department. Fortunately for the College and the future of the Department, Peter King was an indefatigable hard worker; not only did he lead the Department but he frequently had to defend it. There was opposition to taking the path of information processing, rather than calculation. Opposition came both from within the College, and from the University of London. At that time none of us could see that the British University system itself was on the verge of great changes; the classical departments, physics, chemistry, and engineering, must have sensed some rumblings of change, so they tried to ingest computing to revive and preserve their dominance. Peter King, and sometimes myself, would spend hours in debilitating committee meetings trying to defend, not just our Departmental policies, but also the whole future of the scope of computing education. At these meetings everyone seemed to be regarded as an expert in the field of computing, except for us from the Department of Computer Science.

On the practical side there was a demand from businesses and government offices in London for advice and help in transferring their business procedures to the new computers. As well as acting as a consultant for several companies, I was able to ask other lecturers to join me in devising computer programs to assess and control property investments. This involved combining complex, and varied, data handling with some intricate numerical mathematics; it was a problem area in which the wide variety of skills available in the Department could come together, and be seen at their best.

One episode stands out in my mind. In the early summer of 1975 I went to buy a newspaper from my local branch of W.H. Smith in Ealing Broadway. At the side of the shop there was a small doorway with stairs going up to the floor above. On the door was a newly painted sign 'Cramer Electronic Components'. From boyhood I have dabbled in making electrical gadgets, so, on impulse, I went upstairs and looked round at shelves carrying boxes of electrical components. A salesman approached me and asked about my interests; he then said "I have something that will interest you", and he went to the back and returned with a smudged duplicated sheet. It advertised a computer in an attaché case. I thought that it must be a toy. The salesman was indignant and promised to demonstrate the computer the next day. I asked him to come to Birkbeck. Luckily Peter King was in when the salesman arrived with a slim attaché case. The salesman was not sure how to demonstrate it, so Peter and I found the single, smudged, instruction sheet. Looking at the sheet sceptically we disconnected a DEC VT100 terminal from its computer in the Department, and connected it to the case. Following the minimal instructions we wrote a simple program to add two numbers - and IT WORKED! We then wrote several more short programs which also worked.

The case contained a Motorola 6800 8-bit microprocessor, a serial input-output chip, a ROM chip holding a simple monitor, and memory chips with 2K bytes. Both of us knew immediately that we were on the threshold of a new era in computing - the era of the micro-computer, the personal computer. Peter King immediately signed a purchase order on the spot. Very shortly afterwards he sent an almost poetic memorandum to members of the Department. I do not now have a copy, but as I remember it began with the quotation from Shakespeare's Julius Ceasar "'There is a tide in the affairs of men, which, taken at the flood, leads on to fortune...". He went on to exhort the Department to lead the way in showing how micro-computers could be used, particularly in the offices in London.

Two, or three, years later, hard work by Mick Farmer and David Cairns resulted in the introduction of micro-computers into the Birkbeck course.

Another innovative move by the Department was the early introduction of lectures on 'Databases'. During the 1960's the technical attention of computer users was concentrated on the program of instructions which drove the actions of computers; the information and data associated with each activity was of secondary interest. Towards the end of the 1960's computer suppliers realised that, in business computing, the data held in company computers was a major asset which could be valuable in its own right. Handling large volumes of stored data justified a separate, special, 'database' technology, just as programming had its own technology. Peter King had taken up this idea with characteristic enthusiasm, and energy, in the late 1960's. I was aware of this when I arrived in 1972, and I was very happy to concur with him. First, we presented lectures to business audiences, but very soon, by 1973, lectures on databases were put into the M.Sc. Course. It was some years before other universities followed. Some years later we added lectures on human factors and also the ethical and social problems associated with storing, and manipulating, large volumes of data. Today, I believe that these issues could be the most important. for the future.