User-driven innovation: the world's first business computer

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A LEO II at the J. Lyons administrative offices, Cadby Hall, West London

In the immediate post-war period Lyons was a prosperous family company well known in Britain for its many tea shops and confectionery products. The story told in this book relates how the company came to be involved in the manufacture and sale of digital computers and how it fared in that enterprise.

The business in which Lyons was engaged was labour intensive and involved accounting for numerous transactions, each of small value. It was a tradition within Lyons that the control of clerical costs was a vital aspect of keeping the business competitive, and the management was always on the look-out for improved methods. As early as the summer of 1947, Lyons became aware of work being done on the stored program digital computer and saw its potential. They realised that it would be a long time before they would be able to buy a computer and, after due thought, came to the decision to build one for themselves. It was not a decision to originate an entirely new technology, but rather to take one over at an early stage and exploit it.

The technology came from the Computer Laboratory of the University of Cambridge (then known as the Mathematical Laboratory) of which I was director. Representatives from Lyons first visited Cambridge in July 1947, and their report, which will be found embedded in other material in appendix 1, makes interesting reading. The view they give of the Mathematical Laboratory, which they confused with the more famous Cavendish Laboratory, is the product of a one day visit and the comments they make, particularly on the resources available, should be evaluated in that light.

The technology transfer went extremely smoothly. This was in large measure due to Lyons' good fortune in acquiring the services of John Pinkerton, a very able engineer with a similar background to myself, but a little younger. The machine that Pinkerton built became known as LEO (for Lyons Electronic Office) and was in its essentials a copy of the EDSAC, but with enhanced input and output facilities.

By the latter part of 1953, LEO was beginning to take over the Lyons payroll, having for some time been doing a weekly job connected with the running of the bakeries. That payroll should be regarded as the first primary target was a unique feature of the Lyons approach to the use of computers in business, and ran contrary to the prevailing opinion that mechanising higher-level functions should come first.

It was perhaps natural that having built a computer for its own use, Lyons should launch a company to manufacture computers for sale. The first of these, LEO II, may be regarded as an improved LEO I, but by 1962 the company was offering LEO III, which was an independent design.

Unfortunately, by the beginning of 1963, LEO Computers Ltd was requiring greater injections of cash than Lyons could conveniently provide. Accordingly, the ruling family negotiated a merger with the computer department of English Electric to form English Electric LEO Ltd. English Electric were, from the beginning, the major partner and within two years had bought out the Lyons interest. Further amalgamation of companies in the British computer industry followed, until in July 1968 they became generally merged in ICL.

The initial amalgamation with English Electric, coming as it did without warning, was a great shock to the LEO team, particularly as the two companies could not have differed more in tradition and management style. David Caminer, who is the author of the main narrative in this book remained with ICL to the end of his business career, and so did John Pinkerton. The story of the way in which they and their colleagues reacted to the technical, managerial, and personal challenges with which they were faced will be of great interest to students of business administration. Other chapters are contributed by customers and former members of the LEO staff.

I noticed various errors made by contributors who did not sufficiently check their facts, but none of these are likely to trouble the general reader or mislead future historians. Undoubtedly, however, some eyebrows will be raised by the contributor who gives it as his belief that the IBM System 360 was designed by a Czech émigré!

The final computer designed by the LEO team, LEO 326, was very successful. Murray Laver, who writes as a customer, describes how, when he found himself in charge of the National Data Processing Service of the General Post Office, he bought up all the second-hand LEO 326s that he could lay his hands on, to add to those the Post Office already possessed, and persuaded ICL to re-open the production line to make five more. It is tempting to speculate on the future that LEO Computers might have enjoyed if it had continued as an independent organisation and on the further machines that John Pinkerton might have designed.

In a foreword, Prof Richard L. Nolan of the Harvard Business School commends the book as a business case history, and I endorse that. It forms a nice compliment to *'ICL, a Business and Technical History'* by Martin Campbell-Kelly (Oxford, 1989).

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