A note on early automation in Trinity Library (1968 – 1988)[1]

Introduction
The Library's collaboration with the Computer Laboratory dates from the Laboratory's formation in 1968. A computerised catalogue was developed on the Laboratory's first computer – an IBM 360/44. – shared with teaching, research and some administrative processing.

The Catalogue
Trinity's computerised catalogue was one of the very early uses of MARC (Machine Readable Catalogue) magnetic tapes produced by the British National Bibliography's (BNB) Office in the British Museum Library (now the British Library). The MARC format was established in the 1960s as a standard for sharing library catalogue records by computers.

The BNB records were created from newly published books received by the Legal Deposit Libraries' Agency (an office independent of the British Museum Library) on behalf of the libraries (including Trinity's) entitled to one copy of every book published in the UK. The weekly BNB tapes had records for books corresponding closely with the deliveries of c.600 books each week from the Agency to Trinity.[2]

The weekly shipment of books arrived at the New (later, Berkeley) Library loading bay in large wooden crates. The books were transferred to "The Copyright Office" – a small room in the Lower Basement for processing and the empty crates returned to the Agency in London.

Matching in Accessions
The early "matching" system in the Library involved arranging the newly arrived books in an alphabetical title sequence. Each book was matched against a printout, also in title order, by a Library Assistant calling out the title of each book in turn and another Library Assistant checking it off on the printed list. The matched books were then held separately and the checked off printed list was used by Computer Laboratory staff to prepare punched cards to program the computer to print out, "worksheets" for each book the next day. The worksheets were inserted into the corresponding, date-stamped, books by Library Assistants in a secure area ("cages") of the Accessions Department on the ground floor and sent to cataloguing staff for checking and shelf mark assignment. The annotated worksheets were returned to the Computer Laboratory for updating the catalogue, again by using punched cards for the input. The Computer Laboratory Annual Report for 1972/73 records that 74,000 punched cards were prepared for the Library. This process continued until 1979.

In 1974, following additional programming and the installation of data lines from the Computer Laboratory to the Library, records for books received outside the Legal Deposit process (purchases, donations, etc.) were entered directly into the system by staff in the Library Secretariat using a printer terminal. Cataloguers hand-wrote the details onto pre-printed "original cataloguing" worksheets and these were used for the input.

Ten years of the Library catalogue
After 10 years, the Library catalogue had 1.4M records in the system and a cumulative annual catalogue for the reading rooms was produced using computer output on microfiche. The early catalogue was a fan-fold printout in binders to be replaced in 1973 with roll microfilm in cassettes which was used until 1977. Cumulative monthly supplements were produced between each annual run.

Student lending / Circulation
By 1972, the Library was interested in automating the system for lending books to students. This was prompted by the growing collection of student lending books in the Library's collections by the move of the Modern Languages Lending Library from Regent House to the 1937 Reading room in 1967 and the transfer of the Lecky Library collection (Business and Humanities) from the Museum Building to the area under the podium (the "Annex") of the New Library in 1971.

The borrowing (circulation) of these books were managed by the Browne Issue System[3] and in 1979, a report stated there were c.50,000 books available for student loans.

With the opening of the Arts Building in 1978, the arts and humanity books in the Berkeley annex and the modern language collection in the 1937 Reading Room were moved to the new Lecky Library, forming a significant lending collection in the one reading room.

A new computer for circulation of the arts lending collection (PDP-11/34) was funded from the equipment allocation of the Arts Building and installed at the Computer Laboratory in 1979. Work started on programming immediately by Gail Hogan and her team.

However, development of the system was seriously delayed by the changeover of the catalogue system from the IBM 360 to DEC computers.

Changeover of Catalogue System
This changeover was started in 1977 when a DEC 2040 system was installed in the Computer Laboratory as a replacement for the IBM system. A DEC 2020 was installed in 1979 (after a College appeal) for Library and administrative use instead of having to share resources with teaching and research computing. The programs were a complete re-write of the PL/1 software on the IBM in COBOL-68 (later COBOL-74) and the incorporation of new rules (AACRII) for catalogue description and other improvements. Again, this work was done by Gail Hogan and her staff.

There was a certain urgency about the catalogue system as the IBM computer no longer had the capacity for the growing catalogue and much of the processing of the annual public catalogue and the monthly supplements were being done on UCD's IBM machine.

By 1979, the new system was capable of direct online input at terminals in Cataloguing and Accessions. Matching of newly arrived Legal Deposit books with records in the system was done online with a VT100 terminal linked by an acoustic coupler until a data line was installed the following year. Instead of worksheets being printed, a "search number" was written in the book so that Cataloguing staff could quickly find the matched record to add a shelf mark at their terminals. The work of the Secretariat staff was very much reduced, but the individual staff helped with the online processing in Cataloguing and Accessions until the system was fully stable and backlogs were at least under control. Sections of the catalogue were made available for amending in turn; the system did not have sufficient capacity to make every record available all the time. The annual production of a microfiche output catalogue continued with monthly supplements for reading rooms.

Circulation database
It had been hoped that the catalogue system together with a back file of BNB records would provide a large proportion of the book records for the new circulation system. However, surveys showed there was very little overlap as many of the books were foreign language publications and by non-UK publishers.

It was decided that the lending collection records would be best created by keying in brief details of each book into a new database. This was done by Lecky Library staff over a period of about 4 months using a VT100 terminal connected by an acoustic coupler to the Computer Laboratory. There were delays in installing direct lines to the Library buildings, not least because of a long strike in the Post Office. The opportunity was taken to weed the lesser-uses books in the collection and only titles in active circulation were recorded.

Barcodes (Code 39) were inserted into each book and the student ID card printing process amended so that ID cards had barcodes in time for student registration in October 1981.

However, not appreciating the consequences, the barcodes were just associated with the titles of books, and not the individual copies or volumes of multiple holdings. This led to problems at the counters for some years as it was difficult, if not impossible, to know which

copies were on loan or due for return. Over the years, the individual barcodes and copies were matched up correctly. Barcodes were read at the counters using light pen scanners.

Circulation went live for the Lecky Library books in July 1982, soon after the network lines were installed, and reported to be working well in December 1982.

The Luce Hall opened in 1981 with a Science Library on the ground floor, bringing together most science books which had been in a variety of temporary locations. It included all the Science Lending collection. The circulation PDP-11 computer had additional memory and storage installed using funds from the Luce Hall equipment allocation.

In 1983 barcodes were inserted into science lending books. For the Science Books (a much smaller collection than the Arts Lending collection), there was a good coverage of the collection in the automated catalogue system and those records were transferred to the circulation system.

Science lending went live in 1984.

End of in-house systems
The Library catalogue system running on the DEC 2020 and the circulation system on the PDP essentially ran independently until 1988 when the Library's first commercial Library Management System (LMS) was installed from the American Dynix Corporation. However, it was two years before the complete transfer to the new system was completed although OPAC (Online Public Access Catalogue) terminals were installed in the reading rooms earlier.

Other activities
Also during this period, a project started in 1986 to convert the card catalogue (Library acquisitions 1964-1970 and including the brief circulation records) to full computerised records. This project used IBM-compatible microcomputers (ERGO machines) running DOS and search keys were matched against a variety of internal and remote databases. This was completed by 1988[4].

A Shelton Sig/Net Microcomputer[5] in the Library was used for word processing (Wordstar) and had an in-house book purchasing system (from 1985) running on it to about 1989 when it was replaced by IBM-compatible microcomputers for word processing and book purchases incorporated into the Dynix system.

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[1] Compiled chiefly from:
  College Calendars
  Computer Laboratory Annual Reports (https://www.tcd.ie/itservices/general/reports-archive.php
  Accessed 18 August 2018)
  Library/Computer Group Minutes, 1973– available in the Manuscripts Department
  Technical Services Annual Reports 1978 – 1989 available from Keeper (Collection Management)
  Peter Fox. Trinity College Library: a History. Cambridge U. P., 2014.
[2] Alan Tucker. Library Automation in Trinity College Dublin: a progress report.
  Long Room, 2 (Autumn/winter 1970, 36-37.
[3] Browne Issue System – Wikipedia entry : https://en.wikipedia.org/wiki/Browne_Issue_System
  accessed 16 August 2018.
[4] John Fitzgerald, Gail Hogan, Colette Ní Mhoitleigh, Trevor Peare. Retrospective conversion at
  Trinity College Dublin. Vine 69 (1987), 13-24.
[5] https://www.theregister.co.uk/2013/08/21/unsung_heroes_dr_chris_shelton/ Accessed 25 August
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