

Chapter 5.

PROBLEMS

In this chapter, we discuss a number of problems that occurred during the course of the project. The major effect of these problems has been to reduce the number of searches to well below the original target (see sections 5.4 and 5.5).

5.1. The York Box and the size problem

It has already been indicated that the adaptation of Cirt to Release 2.1 of the York Box software was problematic. This had originally been seen as a relatively straightforward exercise, and so it probably would have been, but for the process-size limitations.

The LSI 11 design of hardware has a built-in limitation on the size of program that can be run, namely 64 Kb of main memory. (This is not a Unix limitation: processes of any size can be run under Unix on 68000-based hardware. The limitation reflects the age of the LSI 11 design.) In practice, for a C program, this means 56 Kb of instruction and data space; the remainder is reserved for operating system use. (Again, machines higher up in the LSI range allow instruction and data spaces to be separated, allowing 56 Kb for each; our LSI 11/23 does not come into this category.)

The original version of Cirt (as at the end of the previous project) did not appear to be approaching the limit; there seemed to be enough scope for modifications. However, as indicated above, the installation of Release 2.1 of York Box brought Cirt right up to the limit; indeed it was a struggle to keep within it. (This has been recognised as a problem with York Box.)

As indicated, this led us to the somewhat drastic solution of a two-process version. The change was successful, and allowed us all the scope we needed, but probably delayed the data-gathering phase of the project by not less than two months.

1.2. System crash

Our LSI 11/23 was originally bought in 1981 and has been showing signs of age for some time. At the start of the present project, adequate backup was not available, and steps were being taken to install a tape system which would allow such backups.

Unfortunately, a major system crash occurred in March 1986, before these preparations were complete. A problem developed with the root disc system; the disc had to be reformatted and the inadequate backups available required a considerable amount of work. The entire incident also delayed the data-gathering phase, again by about two months. There have since been a number of less serious problems.

In retrospect, given the range of hardware and software problems encountered, it would have been better if the whole system (Cirt and York Box) had been moved to the Department's LSI 11/73 system. This will almost certainly be done before any new project is undertaken.

1.3. Staffing

The project programmer left in June 1986 with no foreseeable replacement. Despite three months notice and every effort to engage another programmer, a permanent replacement was not found until September. A considerable amount of accumulated knowledge and expertise was lost, and the change undoubtedly contributed to our difficulties.

1.4. Capturing searches

As indicated, the original method of collecting data involved contacting University of London institutions. Of the eleven Libraries contacted, six showed some willingness to participate and three actually did so. The results from this method proved slow and quite unsatisfactory. In retrospect, it is clear that we could have substantially increased the number of searches by instituting the free searches at City earlier in the project, and thereby being less dependent on the contributing institutions.

1.5. Proposal for extension

Given the delays that had occurred and the initial difficulties in getting the data collection going, a proposal to extend the project by four months was made to the BL in April 1987. Unfortunately this proposal coincided with the BLR&D Departments's financial problems which arose because of the pay award to University academic staff. It was

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therefore not possible for the BL to extend the project.

An extension would have considerably increased the number of searches evaluated, and could therefore have been expected to increase our confidence in the results reported in Chapter 4.