

## A Computer Experiment in Legislative Drafting

### *Introductory*

In conjunction with the Central Computer Agency, I conducted an official experiment in the use of computers for legislative drafting at the Parliamentary Counsel Office in Whitehall in 1974-75. The experiment lasted two and a half months, and made use of the Greater London Council's IBM computer across the river at County Hall, to which equipment hired from IBM was connected by Post Office telephone line. In my own room I had an IBM 3270 visual display unit (VDU), while an adjoining room was equipped with a second VDU, an IBM 3271 control unit, and an IBM 3284 matrix printer. In a third room, an IBM communicating magnetic card typewriter (CMCT) was installed. Various IBM staff were on hand, and I had the full-time services of one of their trained machine operators. The object of the experiment was to test the usefulness of the equipment in drafting current Government Bills, using the IBM program known as the Advanced Text Management System (ATMS).

### *Existing Drafting Methods*

Before describing the experiment, I ought to say a little about the method of drafting without the use of a computer. Each draftsman has his own system, and I can only speak for myself. There are several drafting situations: there is the creation of original text - for example, where the draftsman starts with a blank sheet of paper and endeavours to construct a clause that will give effect to his instructions; there is the modification of a text - for instance where the draftsman takes a clause he has previously drafted and sets out to make alterations so as to correct errors, give effect to changed instructions, or improve the drafting; and in the case of a Bill which is going through Parliament, there is the drafting of amendments.

My drafting equipment is quite simply a pencil and rubber. The creation of an accurate, clear and effective legislative text is demanding and difficult. My rubber is much in use, and even so the blank sheet of paper often becomes a jumble of insertions, crossings-out and transpositions. The product is handed or dictated to a typist, or recorded on a dictating machine. When typed it is sent to HMSO for printing. For modification of a text, one begins with the typed or printed original, and works on it in a similar manner. The drafting of amendments follows the same pattern, but the product has to be expressed in the style required for an amendment by the rules of Parliamentary procedure.

### *Equipment Used in the Experiment*

For a description of the ATMS system, I cannot do better than quote IBM's own words:-

*"The specific disadvantage of the written word is that once it appears on paper it is not easily corrected nor can its position be easily changed. ATMS addresses this problem in that words are held in a magnetic store. They are therefore not committed to paper until such time as they are correct. Even then, alteration is simple and a document can be reproduced at high speed with accuracy. ATMS allows the user to draft, edit and store text. The stored text can be displayed on a screen a page at a time and edited ..... characters, words or portions of text can be moved to change the order of words or sentences. Words or numbers can be replaced throughout a document by a simple command ....the displayed document is a working copy of the original held in permanent storage. Thus editorial work does not affect the original. On completion of an editorial session, the original may be replaced by the new copy, or the new copy may be stored as a separate document."*

The VDU is a television-type screen with a keyboard. The order of letters is the same as for a typewriter keyboard, but there are, of course, additional keys for use with the computer. I began with the idea of creating original text (in the form of clauses of the draft Children Bill) by doing the keying myself. I soon found that this is not as easy as one might expect.

I am not a proficient typist, though I have done a certain amount of two-finger work, and can type almost as fast as I can write. Since the drafting process is not a speedy one, I found no significant loss of time in keying the sentences I was composing, rather than writing them out. Loss of time and extra burdens came in other ways. Writing by hand, truly enough, is subject to the drawbacks mentioned in the above extract. But the computer, as I found, has drawbacks of its own.

In any well-ordered office the draftsman will find his drafting pad ready on his desk, his pencils sharpened, and a clean rubber to hand. He has only to begin. And when he begins, he has only to write down the words of his draft. It is not so when the draftsman uses a computer.

First, our system had to be got ready for use. The equipment had to be switched on, and the ATMS system started at the computer by the GLC staff. If our controls showed that this had not been done, telephoning was necessary. Occasionally, one found that the computer was 'down' or otherwise not available.

Second, we had to start the system at our end by making various entries by keying on the second VDU.

Third, I had to 'sign on' to ATMS by making entries on my own VDU. All this, as it were, put the pad, pencils and rubber on my desk. I could then start to draft, and here the real problems began.

The typography and layout of a Parliamentary Bill are complex. It has headings in large capitals, headings in small capitals, and italic headings. It has shoulder notes and marginal notes. Its clauses are elaborately paragraphed and sub-paragraphed. It uses large and small Roman numerals as well as Arabic. Occasionally it uses bold type or italic type in the body of the Bill. It may have Schedules with their own peculiar layout and some of these may be in tubular form. It uses many different sizes of type.

In order to get any sort of layout with the computer, one has to use 'formatting'. This involves keying symbols at every point, to instruct the computer on the differing amounts of indentation for a heading, a clause, a paragraph, and so on. Even with this device we could not get things like sidenotes, and these had to be changed to headings. In other words, we could not get on the computer printout or screen even the degree of formatting that an ordinary typewriter is capable of, and what we did get was troublesome to achieve.

The whole advantage of ATMS is supposed to be in 'text management': that is, changing the wording of a text. Here the problem of having to do additional keying to maintain the formatting became acute. I could not concentrate on pure drafting problems because I was constantly distracted by having to cope with symbols which had nothing to do with the actual text. Of course, if such a system were permanently in use, draftsmen would become familiar with the use of these symbols, but nothing can alter the fact that their irrelevance to the legislative text adds a distracting factor.

The symbols to be keyed go further than those required for formatting - for example, keying is required to bring a text from its permanent store in the computer to a working store, so that the text can be modified, or to move a text from working store to permanent store. Much more formidable is a keying task I did not undertake. It makes sense to use a computer for drafting only if the printer has a terminal linked to the computer which the draftsman can use to set up type (by photo-composition under present technology). This requires a whole further range of symbols to be keyed by the draftsman for the purpose of instructing the typesetting machines on the type faces and sizes, and similar matters.

*The Communicating Magnetic Card Typewriter (CMCT)*

My experiment was conducted in the course of my ordinary work of drafting Government Bills (draftsmen are too scarce to be allotted special time for such purposes). As soon as it became clear that by doing my own keying I would reduce my drafting output, I had to find other ways. One was to use the IBM operator to do the keying for me; another was to use the CMCT. Neither was any help for the creation of original text, and here I was forced back to my pencil and rubber. For modification of text, the prospect was better.

The keyboard of the CMCT is similar to that on the VDU. The output of the CMCT can either be passed directly to the computer, or stored on magnetic cards which can later be fed into the computer (this has advantages if the computer is not available when keying is to be done). The CMCT also very rapidly produces a print-out from the computer which is of excellent quality - far superior to the product of the matrix printer, which we scarcely used. (Nor, for practical reasons, were we able to use the GLC's line printer.)

The following system was adopted. By conventional drafting methods I created an original text. This was keyed by a typist using the CMCT, and a print-out obtained. Where necessary, I modified this print-out text by hand, as I would a conventional typescript. The alterations were keyed by the IBM operator (using the second VDU), and a further print-out obtained. Alternatively, I would get the operator to bring the text up on my VDU screen, and direct him what alterations to make; again a revised printout would be obtained from the CMCT. The former method was more suitable when the drafting alterations were substantial and required research or prolonged reflection. In other cases, when I used the latter method, I found it a considerable help to operate with the displayed text, but, of course, the time of an expensively-trained operator was being taken up - not to mention the cost of the equipment itself. Furthermore, we suffered from lengthy response times when, as often happened, the computer was in heavy use for GLC purposes. The system by which the draftsman, watching the screen, instructs the operator what changes to make breaks down if it takes more than three or four seconds for the computer to accept an alteration.

We made little use of the more sophisticated features of ATMS, though on one occasion we were able, by one keyed instruction, to let the instructing Departments see the effect of altering 'custodian' in the Children Bill to another term throughout; and later, by another single keyed instruction, alter the term back to 'custodian' when the alternative proved unpopular.

#### *Service to Government Departments*

An improved aspect of the experiment was to see whether use of the computer would improve the service the Parliamentary Counsel Office gives Government Departments in the preparation of Bills. The usual procedure is that, as he drafts the initial clauses or schedules, the draftsman sends them to HMSO for printing, and then distributes the print to the instructing Departments for comment. Quite soon something that can be called a draft Bill (though incomplete) comes into existence, and thereafter additions and alterations are incorporated each time by reprinting the entire draft Bill. Governments are usually in a hurry for their legislation, and Departments need prints or revised draft Bills as speedily as possible. Until very recently, a draftsman who sent off his printer's copy at 7 p.m. could confidently expect to find the new print on his desk at 10 o'clock the next morning; those days have passed, and recently serious hold-ups in printing have occurred.

That led us, with the next Bill I drafted (the Sex Discrimination Bill), to see whether we could dispense with HMSO prints until the time the Bill came to be published; instead, we would use CMCT print-outs. For reasons I need not go into here, I did not send the Departments any draft clauses of the Sex Discrimination Bill until more than half the Bill had been drafted. Meanwhile I was using the computer in the way described above, so that the clauses as drafted were inserted in permanent store. Finally, the time came to send out the first version of a draft Bill. Many people were involved, and about 100 copies were required; this posed a problem since the draft ran to 50 pages, and even the speedy CMCT would take quite a long time to print out 5,000 sheets symbol by symbol, and while doing so it would not be available for current drafting. Furthermore, the quality of the CMCT print-out, though good, is far inferior to the conventional printing which Departments were accustomed to.

A compensating advantage would have been that, as the draft Bill grew, we could have sent out revised and additional sheets daily, so that the Departments would have got a speedier service than HMSO were by that time able to give. (We had used this system for a time with the Children Bill, and it had worked well.)

However, the compensation was insufficient to outweigh the drawbacks mentioned. We were forced to accept that the first draft of the Sex Discrimination Bill, and subsequent revised drafts, would have to be printed by HMSO. Here we faced an insuperable difficulty, which brought the experiment to an end.

#### *End of the Experiment*

I have said above that it makes sense to employ a computer for drafting only if the printer can use the stored data for typesetting; this needs explanation. Under the drafting system which has been in use for many years, a draft Bill, as it is got ready for introduction into Parliament, is reprinted at frequent intervals.

There may be something like 20 reprints, at intervals of a week or so, before the draft goes before the Legislation Committee (a Cabinet Committee) with a view to introduction shortly after. Each time the draft is reprinted, the draftsman has to prepare printer's copy consisting of the previous print marked in ink, and accompanied by typed riders which are often lengthy and numerous. Meticulous accuracy is called for.

Under the present system, the draftsman prepares these riders as he goes along, and keeps his personal copy for the last print fully marked up. With the ATMS system, on the other hand, the whole point is that one does not operate in this way at all. Instead, one puts the alterations into the computer as they are devised. If HMSO cannot produce the next print from the version currently in the computer, the advantages of the computer are largely thrown away. A printer's copy, incorporating all the changes made since the last print, would have to be prepared, and there is no simple way of doing this. It could be done only by a laborious, time-consuming process of comparison, in which mistakes would inevitably be made.

HMSO may go over to printing by computer-assisted photo-composition one day, but that day is not yet. Nor did it prove practicable to extend my experiment into the HMSO field and mount a special printing exercise. We considered we should, after all, use CMCT print-outs for circulating early drafts of the Sex Discrimination Bill, but were forced to reject this course. The Bill was wanted for introduction as soon as possible. With the printing delays at HMSO, to leave the whole Bill to be set up in type in one operation was to court trouble. Since my full attention had to be given to this Bill and the computer could not be used on it, the conclusion was inescapable. The experiment came to an end rather sooner than we had hoped when we started. But much had been learned.

*Computers and the Law*, November 1975.