

## The Integrated Production of Braille, Moon and Large Print

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In the UK, production of braille, Moon and large print has been undertaken by a number of different organisations, and there has been no attempt to integrate the production methods. The reason for this state of affairs is historical in that the methods of production and distribution have been different for all three media.

Braille has been mainly produced by charitable organisations who sell it at greatly subsidised prices or loan it to blind people free of charge. For the last few years, Moon has been provided free of charge. Whereas large print has been produced by commercial organisations who see their main market as books for public lending libraries.

Since Moon is little used outside the UK, a brief description of the system is appropriate. The Moon code was developed by Dr William Moon in Brighton, England in 1847. The characters are based on the sighted alphabet and are about 6 mm high; the embossing is about 0.5 mm. Like braille there is both grade 1 and grade 2 Moon, but grade 1 is used a significant amount. The contraction system in grade 2 Moon is simpler than that in grade 2 English braille, but the rules governing word division at the end of a line are more complex. There are a number of peculiarities eg the numeric comma is represented differently depending on whether or not the amount is a financial quantity. The punctuation is also different from print eg there is no space after a full stop at the end of a sentence unless it is the end of a paragraph. Another problem is that there are three different space characters in Moon.

Moon is written in zig-zag fashion down the page eg the first line is written left to right and the second right to left but with the characters in the same orientation. This gives a problem in that some characters feel very different when they are read from different directions. Another problem is that Moon is proportionally spaced and justified but not microjustified; the justification is

to much closer tolerances than used in print justification software.

The present production system, which has been in use for many years, uses manual typesetting with individual lead slugs. It typically takes an hour to set and proof-read a page of 900 characters. Copies are produced on a conventional press with damp paper which then has to be dried under a gas heater. The definition of the embossed characters is poor since the male master is pressed onto a rubber sheet (and not a female master as in most braille production systems). This production system is used for all quantities of work - from single copies of correspondence to large scale production of magazines. For small quantity work the typesetting cost is the dominant factor in the cost of production.

The new system developed for producing documents in Moon uses a 16-bit microcomputer with a standard word-processing package for text input. The Moon translation software is written in Fortran77 and translates at about two thousand words per minute. The output is to a laser printer in which the Moon typeface is stored as an additional font. The advantage of using a laser printer is the very clear dense image which can be produced. The printer only produces a print version of the Moon, so the embossing is produced using encapsulated paper (as produced by Minolta and RPH-SYN). Tests done by the Royal National Institute for the Blind indicate that users prefer this medium to the conventional one of embossing on paper; this is probably because the symbol definition is better with the encapsulated paper. The cost of the special paper makes this system more attractive for small quantity production; a further development may be to photoetch plastic plates to use as masters for magazine production.

The laser printer is also capable of producing high quality large print (eg 16 point Kosmos Bold) at speeds of about six pages per minute. Braille could be produced by a similar method to the Moon but this would only be economically viable for small quantities. Therefore the usual method of braille output is by a conventional braille embosser such as the Resus RS-14. With the increased power of a 16-bit microcomputer it has been possible to implement a more sophisticated braille translation algorithm.

Three versions of the system have been developed. The first was specifically

for Moon production at the Royal National Institute for the Blind Moon Branch and is based on an IBM PC microcomputer; this system is called BUMPS (Brunel University Moon Production System). The second one is the standard version designed for local associations for the blind and social service departments; it is called BUMBLE and produces output in all three media.

The third version was designed for book production. In Britain three of the larger producers of braille decided that it was desirable to have compatible computer systems. Initially Scottish Braille Press in Edinburgh installed two identical Data General computers; one computer handles the input side and the other does the translation and output to the embossers (both paper and metal plate). National Library for the Blind near Manchester installed three identical Data General computers; two are used for input and one for the translation and output to a double-sided paper embosser. Finally another identical computer was installed at Research Unit for the Blind for the production of braille statements of account for Lloyds Bank, Midland Bank, Bank of Scotland, Northern Bank, Clydesdale Bank, Royal Bank of Scotland, Williams & Glyn, and Bank of Ireland.

One advantage of using the same computers and software is that software development costs can be shared by the various organisations. Also it is easier for one organisation to act as a back-up for another.

The third version of the Moon and large print system has been designed to run on these computers and uses the same format commands as used for braille production. The problems with implementing this system have been more of an "administrative" nature than technical ie overcoming the problem of which organisation traditionally produces which medium. It is hoped that the administrative problems can be resolved in the next few months so that Moon and large print books can be regularly produced from the digital tapes used for braille production.

Most of the other further developments concern remote input to the systems by volunteers working at home. Sighted typists can input to the system by using Epson HX-20 computers and sending the tapes to the computer centre. Another development is an equivalent braille input device for volunteers who are brailleists; this will be particularly useful for special codes such as music.