

Research in Progress

The editors welcome shorter reports on research topics currently under investigation. These reports may seek comment and additional information from other researchers interested in similar problems; or they may summarize investigative studies which suggest implications for further research.

Communications should be addressed to the Editor, c/o The Cleveland Museum of Art, Cleveland, Ohio 44106, USA.

Computer Graphics as a Tool in Typographic Research

There is much interest today in computer-controlled high-speed electronic character generation both for direct viewing and for photocomposition. All of the systems with which the author is aware take a face which has been completely stored optically or electronically in memory and convert it into a visual image. There does not seem to have been any interest in developing a flexible character-generation system which could be used to model fonts both for the investigation of known faces and for the design of new and different type styles. Such a system using pictorial, as opposed to numeric, computer output would seem to fall within the emerging field of computer graphics.

As one aspect of our research activity, the Digital Systems Group of Case Western Reserve University in cooperation with Harris Intertype and *The Journal of Typographic Research* has undertaken the development of a general purpose man-machine graphical computer system to be used in the study and design of the twenty-six Roman capital letters. The system will run on a Computer Control Co. DDP116 general purpose computer using a teletype as the primary man-machine communication device and with an on-line California Computer Products Co. plotter as the source of graphical out-put. The letters themselves will be nominally .2" to .25" in size, depending upon the desires of the operator. All letters will be generated inside the computer on a 200 x 200 raster with a resolution of 800 lines-per-inch. The plotter has a resolution of 200 lines-per-inch so the plotted character size will be four times actual size. The generation system itself will consist of a monitor program, twenty-six sans-serif letter generating programs and various serif generating and plotting routines. All programs will run under the control of the monitor which may communicate with or receive data from the operator. The system will be interactive and run in real time. The operator specifies which letter he wishes to investigate. The monitor system then reports the data it already has available in memory that is applicable to the letter and specifies any

additional data it needs to enter the desired generation routine. Data in memory might have been previously entered by the operator or might have been derived by the monitor from the characteristics of previously-designed letters. If a generated letter is not suitable to the designer, it is only necessary that he recall the program and alter that part of the letter which is displeasing to him.

The question of how to set up the generating routines and what relationships and parameters are important in the construction of letters has been handled by deciding to look at five different type fonts and visually making judgment concerning the relationships that exist from letter to letter across these fonts. A preliminary study, undertaken in the spring and summer of 1967, on the letters A, H, and K for five fonts indicated that such relationships could be found and utilized to generate close approximations to known type faces or to produce new and different ones. The question of whether or not five fonts are adequate is still unanswered. However, the generating routines are being set up such that if the designer does not like the value suggested by the computer for some parameter based on previously entered data, the value may be changed by means of the teletype.

This system will not alleviate any need for the designer to make judgments based on good taste with regard to the characters he is generating, but it should shorten the time between a concept being formulated in the designer's mind and a set of drawings to look at and think about. It will also allow him to see immediately what the effects of altering one letter might be on the rest of the font.

Any reader comments, suggestions or criticism of these ideas would be most appreciated by the author.

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