

A METHOD FOR THE PRODUCTION OF TACTUAL MAPS AND DIAGRAMS

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Using computer-aided design principles, a system is being developed in the United Kingdom for the production of tactual maps and diagrams for the blind and visually impaired.

The production system composed of the following steps:

1. Input of graphical information from a coordinate table
2. Editing and insertion of text on a visual display unit
3. Negative master produced on an engraving machine
4. Positive copy made using silicone rubber
5. Plastic copies reproduced on a vacuum forming machine.

The map or diagram to be copied is considered as an annotated line drawing. This information can be input from the coordinate table, with the resulting picture simultaneously displayed on a visual display unit.

Editing on the visual display unit permits the insertion or deletion of individual lines, movement of end points of lines, and change of scale. A wide variety of line types (continuous, dotted, dashed, etc.) can be specified from the keyboard. The operator also has control of the height of the lines on the final copies.

A joystick can be used to position standard symbols. Alphabetic text can be input from the keyboard; the text is automatically converted to grade 1 braille, with a choice of four different cell sizes.

When a satisfactory display is obtained output is requested. This can include output on a digital plotter for future reference, and also magnetic tape or punched paper tape. A map can be stored on a tape and then quickly modified at a later date.

The negative master in laminated plastic, such as Tufnol, is produced on an engraving machine which is either controlled directly from the computer used in the design stages, or from a smaller computer with the data on punched paper tape. A positive copy is produced using silicone rubber; copies, in a plastic called Brailon, are produced on a vacuum forming machine.

At present the system does not include textures, but these can be incorporated when a set of tactually discriminable textures has been identified. No allowance has been made for the partially-sighted reader; the simplest solution is to use black paint to emphasize the outline on the plastic copy.

The main drawback to the system is that it requires an operator with knowledge of what is tactually meaningful to blind people with varying experience of tactile graphics.

The system is still in an early stage of development, hence it is

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only being used for producing maps and diagrams for research purposes. This work is being carried out jointly with the Blind Mobility Research Unit, (Nottingham) and

the Research Center for the Education of the Visually Handicapped, (Birmingham). Current work is concentrated on identifying a set of tactually discriminable line, area, and point symbols.