

TACTILE INTERPRETATION OF MAPS FROM GEOGRAPHIC INFORMATION SYSTEMS: DEVELOPING EXPERIENCE AND CONFIDENCE IN BLIND USERS

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The on-going acceptance of Geographic Information Systems (G.I.S.) as the favoured technology for the study of spatially-based problems is recognized as a positive step. For those who have severe visual handicaps and are limited to work with maps that can be read tactually, however, the adoption of G.I.S. represents a step backward. Very few effective tactile maps have been produced from such systems. The cartographic design capabilities of G.I.S. remain rudimentary, and it is these latter than pose the major challenge for the tactile map maker.

Our ultimate objective in this project is to achieve a range of tactile products that would allow blind persons to participate in public hearings and similar interactive, informational sessions that address geographic (spatial) problems. We are using microcapsule paper that allows rapid creation of tactile maps. We are seeking to utilize standard symbol sets available in G.I.S. In previous papers the authors have explored the limitations of such symbol sets for several commercial G.I.S. and early experiments using blind subjects identified particular problems using raster systems.

It is clear from work that most blind persons, if they are familiar with maps, have a limited range of experience with map topics, mainly with locational maps. The present paper reports on a training phase of experimentation with blind subjects.

A small group of blind subjects is being used with each one categorized as blind or partially sighted (*i.e.* if they have any residual vision). We first establish their previous experience with maps and facility with braille. They then work with simple maps produced with a G.I.S. to develop some confidence. The availability of a NOMAD device is very useful as it allows subjects a measure of independence. NOMAD is a pressure sensitive tablet where messages can be assigned to spatial locations and then accessed through touch by a speech synthesized voice. However, NOMAD also has the potential to create subjects who are dependent on the device: where possible its use is limited to map basics (*e.g.* legend, scale, orientation) and legend interpretation where it may be an essential support for those with limited understanding of braille. The final step in these experiments is to take each subject through a very simple G.I.S. application using one system's standard but tactile compatible, cartographic display.

Present work recognizes that the average blind person can not understand map products from G.I.S.: indeed, appears to have very limited prior exposure to maps. It is, therefore, necessary to develop subjects with some facility in the use of tactile maps and to widen the range of map topics with which they have experience. Only then can we contemplate their participation in a real-world public hearing, or similar experience. To the extent that the present, on-going experiments are successful, there will be a small pool of experienced G.I.S. tactile map readers and information on the quality and quantity of training required.