

AUTOMATED SELECTION OF TOPOGRAPHIC BASE INFORMATION FOR THEMATIC MAPS.

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While GIS are capable of producing effective maps, generally they provide little assistance with map design for non cartographically trained users. There may be default settings for many parameters, but often these are poor and are inflexible to changing requirements. In order to alleviate this it is necessary to build cartographic knowledge into GIS so that non cartographic users can more easily produce sensible maps which conform to basic principles of cartographic design.

One aspect that knowledge based systems could be applied to is the selection topographic background information to provide context for special topic information in thematic maps. Map authors are understandably primarily concerned with the main topic information so having to spend time considering and selecting appropriate classes of topographic information from a potentially extensive topographic database with many feature classes is a distraction from their overall goal.

The selection of appropriate topographic information will depend upon map topic, map purpose and scale. Based on values for these and knowing what information exists in the topographic database, a knowledge based system can select the appropriate classes of information for display. In order to reduce significant problems of generalisation, a topographic database at 1:250 000 has been used as the starting point for this study and the scale of output maps limited to the 1:250 000 to 1:1000 000 range, but the approach could be applied to other scale ranges.

In order to create the knowledge base a selection of published maps have been examined for their content. Two aspects have been considered: maps with the same topic at different scales; and maps at the same scale but with different topics. However many published maps represent a compromise by accepting standard topographic base material rather than creating a specific topographic base for the topic. In order counter this problem and further develop the knowledge base, questionnaires have been completed by practicing cartographers to determine what they consider to be optimum content for maps on a range of topics at several scales.

Having assembled this knowledge base, several approaches to selection of base information are tested to determine the appropriate weights to be applied to the various factors influencing selection. While this method may not produce the ideal selection in every case, it will stop important information being overlooked, or information being included that is not relevant to the topic and will allow user of GIS to focus on other issues in analysing their data and producing maps.