Dimensions of User Needs in Cartographic Sketches

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The answers to some simple queries in a Geographic Information System often require decisions on parameters which the user takes for granted and does not want to specify explicitly. For example, when a user tells a system "Show me a map of where I am", she probably has a certain purpose or task in mind, such as getting to the next subway stop. She expects to get a quick cartographic sketch containing surrounding buildings, major landmarks, and public transportation lines - requirements which the system has to infer from the context or guess from heuristics. If the task were to determine the orientation of a building and the potential sunshine exposure of some rooms, the system would have to produce a map that looks quite differently.

The parameters to be decided by the system when drawing maps or cartographic sketches for such a query include: spatial extent of the map, ontology of its contents (what kind of objects are shown?), relevance of objects (which objects are important for the user's task?), point of view and projection (2d, 3d perspective, multiple views etc.), symbolization rules (depending on the user's background).

In order to find the relevant parameters or dimensions of these decisions, a study was carried out. Six groups of people with various professional backgrounds (among them geographers, cartographers, surveyors, architects, planners, geologists, biologists, computer scientists) were asked to draw a sketch of the surroundings of where they were, with no further specifications on the purpose of the sketch. In some instances the subjects were familiar with the locality, in others they were not.

The paper reports on an analysis of some two hundred collected sketches, addressing the following questions:
- how did the subjects interpret "surroundings"?
- how do their ontologies differ (classes of objects represented)?
- how were relevant objects chosen in each class?
- what kind of representational means were selected?
- which disciplinary styles and preferences can be identified?

From this analysis, conclusions are drawn on a set of dimensions along which representational choices for screen maps should be organized.