

Workshop

Spatial Cognition in Architectural Design

Anticipating User Behavior, Layout Legibility, and Route Instructions in the Planning Process

www.sfbtr8.uni-bremen.de/SCAD

in conjunction with international Conference on Spatial Information Theory (COSIT'07)
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workshop description

Architects make inferences about the spaces that they are not in. They can infer how multi storey buildings look like by inspecting separate 2D layouts of the floors. They can mentally synthesize separate spaces that make up a building design, and they can create alternative designs by revising the spaces and how these spaces may come together.

Apart from these inferences, architects may also anticipate how residents and visitors of a building will behave in the spaces. They may design a building in such a way that people's ability to understand the spatial layout of this building is influenced (in a positive or negative way). For instance, the legibility of the spatial environment may influence the way in which routes between locations in the building are conceptualized, mentally processed, and communicated. These issues as well can inform and change the architect's spatial inferences and decisions in the architectural design process.

When we study how architects work, think and design, we observe that they use multiple external cognitive tools to make spatial inferences. However, we cannot directly observe what internal resources they use or how they make these inferences using their internal spatial cognition facilities. There is anecdotal evidence that an architect is not limited to the periods of using external cognition to be engaged in spatial infer-

ences. S/he also can be solving a spatial problem while, for instance, driving or having a shower. Therefore there is recently more emphasis on the efforts to understand internal cognition of designing.

From a behavioral perspective, spatial cognition in the process of architectural designing concerns constructing and interpreting spatial information internally and externally using layouts, diagrams, symbols, gestures, models, and various forms of digital media. To study how architects are engaged in these activities we distinguish between internally induced / mental inferences and externally induced inferences. Mental inferences may refer to two kinds of environments: the space around the body (i.e. visible and tangible environments) and the space the body navigates in (i.e. the environment too large to be seen at a glance). An architect's inferences require switching between both mental space types; a mental space where his body navigates in and between spatial components of a building and a mental space defining the global layout of the building (i.e. how it relates to the site and surroundings).

Questions to be considered in this workshop include, but are not restricted to:

- How do architects switch between the designer's and the users' perspectives during the design process?
- What types of (internal and external) knowledge representations and processes do they make use of?
- What are suitable computational tools for dealing with the spatial complexity of the diverse spatial perspectives and requirements?
- What means are there to anticipate the way future users of the building will conceive of the building layout?
- Regarding complex built environments, how can the aspect of conceptualizing and communicating route knowledge be integrated in the design process?
- How do spatial / architectural and mental complexity related to each other with respect to building layouts? What are the limits both in the design process and the real experience of the resulting building complex?

call for contributions

Authors are invited to submit a contribution of 4 to 6 pages as basis for discussions during the workshop (pdf file in Springer Lecture Notes in Computer Science format, see www.springer.com/lncs). Please send your contribution to barkowsky@sfbtr8.uni-bremen.de. Accepted contributions will be made available on the workshop web site, unless their authors instruct us otherwise.

important dates

30 April 2007	submission of workshop contributions
15 June 2007	notification of acceptance
07 July 2007	final versions of workshop contributions
19 Sept 2007	workshop