**Spatial Cognition and Architecture – from Evidence to Design**

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Advances in digital media and computation have spurred renewed interest in modeling, anticipating and predicting the human experience of architectural spaces. But how does one capture the ‘soft’ factors of human behavior and human appreciation of a building design? How can psychological parameters be included as part of evidence-based design? I will provide an overview of how our spatial cognition research group tackles this with an emphasis on human movement pattern in complex, publicly accessible environments. We combine real world behavior observation with Virtual Reality simulation of building design options. This goes beyond traditional post-occupancy evaluation by providing pre-occupancy assessment opportunities. To capture the richness of human perception and environmental appreciation we engage volunteer participants in a series of interaction tasks in a real or virtual setting, measuring their reactions with behavior- and path-tracing, eye-tracking and physiological measures of stress and arousal. This helps us identify points of misfit between the architect’s intentions and the present – or future – patrons’ reaction to the building design. Digital tools provide the basis for immersive virtual reality experiments to compare design alternatives, as well as for agent-based simulations of patron behavior, both for individual wayfinding analysis and development of cognitively enriched crowd movement simulations.