

SFB/TR 8 Spatial Cognition / IQN Video Conference

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Spatial integration within environmental spaces

In order to represent environmental spaces such as buildings or towns, multiple views experienced during navigation have to be integrated. In several experiments, we examined the underlying processes of reference frame integration. Participants walked through virtual environments displayed via a head-mounted display. Then, we tested their acquired survey knowledge as accessed via pointing or object placement tasks. Results indicate that participants constructed their survey estimates during retrieval in an incremental process starting from their current location. The route order in which participants experienced the environment influenced their estimates. We also presented participants with an environment containing an invisible teleporter. In order to represent this environment within a single Euclidean reference frame, locations have to be distorted. On average, participants distorted their environmental representation, however, not in way in which was indicative of a single Euclidean reference frame. Overall, our data suggest that participants did not construct a global reference frame common for all environmental locations, but rather solved each survey task individually within a step-wise process.

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