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Flexible integration of a navigable, clustered environment

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Abstract: The representation of navigable space, consisting of multiple interconnected spaces, yet is not well understood. We examined different levels of integration within memory (local, regional, global). Participants learned two distinctive regions of a virtual environment that converged at a common transition-point. Subsequently, we tested their memory with a pointing task, varying body alignment during pointing, corridor distance to and regional belonging of the target. Pointing latency increased with increasing distance to the target and when pointing into the other region. Further, alignment with local, regional and global reference frames were found to facilitate pointing latency. These findings suggest that participants memorized local corridors, clustered corridors into regions, and also formed global reference frames, thus, represented the environment on multiple levels of integration. They are inconsistent with conceptions of spatial memory for navigable environments based either on exclusive representation within a single reference frame or exclusive reliance on local reference frames.