

## **ACT-R/S: Coordinating spatial representations**

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How are humans able to transform map-based representations of space into embedded behavior in an environment? Many neurological researchers have argued that there are no transformations necessary, pointing towards the “place-cell” phenomenon as evidence that all navigational spatial representations are inherently map-based (O’Keefe & Nadel, 1978). But this begs the question since the “place-cell” phenomenon is dependent upon direct experience of the environment to develop the hypothesized map-like representation. Humans, however, are able to utilize a map in completely novel environments, requiring, at the very least, a mechanism to co-register the environment to the map.

We will present some early data from an fMRI study of map-based navigation showing the differences in processing between those who have a trained map representation and those that have only direct experience with the environment. How this data fits within the current framework of ACT-R/S (spatial) will be detailed and initial modeling work will be presented.