Getting lost in buildings: Architecture can bias your cognitive map (w/ Video)

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Some people always know which way is north and how to get out of a building. Others can live in an apartment for years without knowing which side faces the street. Differences among people that include spatial skills, experience, and preferred strategies for wayfinding are part of what determines whether people get lost in buildings -- and psychological scientists could help architects understand where and why people might get lost in their buildings, according to the authors of an article published in *Current Directions in Psychological Science,* a journal of the Association for Psychological Science.

When you enter a new building, you build a cognitive map-a representation in your mind of the objects and locations in that environment. Success in navigating in the building may depend upon what information you put into the cognitive map. "For example, imagine visiting a new doctor's office. You walk in the front door and find your way to the office, storing information about your route and the objects you encounter in your cognitive map. What is most interesting is how this information is then used to direct you back to the front door after the office visit.

"If you paid attention to the sequence of turns along the path, then you may have difficulty because you need to remember to reverse the sequence, and this becomes increasingly difficult as the number of turns increases. But instead, if you paid more attention to the objects that you passed, then you may navigate back to the front door by going from one familiar object to another without considering the sequence of turns. This strategy will work, as long as you can always see a familiar object. If you get lost and enter an unexplored part of the building, you will have difficulty finding your way back," says Laura A. Carlson of the University of Notre Dame, first author of the article.

In some buildings, the strategies people use and the quality of their cognitive map may not matter very much. "If the building has an obvious structure, with long lines of sight, you won't have to rely much on this internal representation of your path," says Carlson.

Some buildings, on the other hand, make it difficult. Carlson and her coauthors, Christoph Hölscher of the University of Freiburg, Thomas F. Shipley of Temple University, and Ruth Conroy Dalton of University College, London, use the Seattle Central Library as an example. The bold building, designed by Dutch architect Rem Koolhaas, opened in 2004 and won awards for its design. But visitors complain that it's difficult to navigate. People expect floors to have similar layouts, but the first five levels of the library are all different; even the outside walls don't necessarily line up. Normally, lines of sight help people get around, but the library has long escalators that skip over levels, making it hard to see where they go.

For building users who may find navigating in new environments challenging, there are strategies that are helpful. "I used to worry when I explore a new city by myself that I would not find my way back to the hotel," Carlson says. "However, this simple trick is effective. At each intersection where I need to turn, I spin around to see what the intersection will look like from my return perspective. That way, I will be able to recognize it from the other direction, and I can store that view also in my cognitive map." This strategy also tends to work well for indoor navigation.

Architects, on the other hand, may be among the class of people with very strong spatial skills, because their craft requires numerous spatial transformations, such as needing to envision 3D space from 2D depictions. One unanticipated consequence of such abilities is that they may not be very good at taking the perspective of a user with poorer spatial skills, and therefore may not be able to fully anticipate where users may have

navigational difficulties within their buildings.

Architects and cognitive scientists could learn from each other, Carlson says. Architects could explain how they use building features to encourage certain patterns of movement within the building, informing research on how people move through space; scientists could contribute data on how we build cognitive maps and what strategies different people use to find their way around.

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