Where am I? How our brain works as a GPS device

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category: EDUCATION > Science

Where am I? How our brain works as a GPS device

We've all experienced the feeling of not knowing where we are. Being disoriented is not pleasant, and it can even be scary, but luckily for most of us, this sensation is temporary. The brain employs a number of tricks to reorient us, keeping our confusion to a minimum and quickly pointing us in the right direction. Research has suggested that animals and young children mainly rely on geometric cues (e.g. lengths, distances, angles) to help them get reoriented. Human adults, however, can also make use of feature cues (e.g. color, texture, landmarks) in their surrounding area. But which method do we use more often? Psychologists Kristin R. Ratliff from the University of Chicago and Nora S. Newcombe from Temple University conducted a set of experiments investigating if human adults have a preference for using geometric or feature cues to become reoriented.

The first experiment took place in either a large or small white, rectangular room with a landmark (a big piece of colorful fabric) hanging on one wall. The study volunteers saw the researcher place a set of keys in a box in one of the corners. The volunteers were blindfolded and spun around, to become disoriented. After removing the blindfold, they had to point to the corner where the keys were. After a break, the volunteers were told the experiment would be repeated, although they wouldn't watch the researcher hide the keys. Unbeknownst to them, during the break the researchers moved the landmark to an adjacent wall—this change forced the volunteers to use either geometric cues or feature cues, but not both, to reorient themselves and locate the keys. For the second experiment, the researchers used a similar method, except they switched room sizes (the volunteers moved from a larger room to a smaller room and vice versa) during the break.

The results, reported in *Psychological Science*, a journal of the Association for Psychological Science, reveal that the brain does not have a distinct preference for certain cues during reorientation. In the first experiment, volunteers reoriented themselves by using geometric cues in the smaller room but used feature cues in the larger room. However, the volunteers who went from the larger room to the smaller room in the second experiment also relied on feature cues, searching for the landmark to become reoriented.

During the second experiment, the researchers surmise, the volunteers had a positive experience using feature cues in the large room, so they kept on relying on the landmark in the smaller room to become reoriented. These findings indicate that the brain takes into account a number of factors, including the environment and our past experiences, while determining the best way to reorient us to our surroundings.

For more information about this study, please contact: Kristin Ratliff (krratliff@uchicago.edu)

Psychological Science is ranked among the top 10 general psychology journals for impact by the Institute for Scientific Information. For a copy of the article "Reorienting When Cues Conflict" and access to other *Psychological Science* research findings, please contact Barbara Isanski at 202-293-9300 or bisanski@psychologicalscience.org

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14.01.2009 | 18:14

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Learning science in informal environmentsNew report from National Research Council examines science learning outside of schoolAnyone who has visited a science museum, gone on a nature walk, or watched a science program on public television knows that one need not be in a classroom or lecture hall to learn about science. Indeed, opportunities to be immersed in science present themselves to people of all ages, backgrounds and abilities, in a myriad of locations.

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Nations that sow food crops for biofuels may reap less than previously thoughtMADISON -- Global yields of most biofuels crops, including corn, rapeseed and wheat, have been overestimated by 100 to 150 percent or more, suggesting many countries need to reset their expectations of agricultural biofuels to a more realistic level.

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More chip cores can mean slower supercomputing, Sandia simulation shows16 multicores perform barely as well as two for complex applicationsALBUQUERQUE, N.M. — The worldwide attempt to increase the speed of supercomputers merely by increasing the number of processor cores on individual chips unexpectedly worsens performance for many complex applications, Sandia simulations have found. A Sandia team simulated key algorithms for deriving knowledge from large data sets.

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