

Scientists Noted for Mental Mapping Win International Psychology Prize

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How do people know where they are and how they got there? Two scientists whose pioneering research addressed those questions have earned the 2006 University of Louisville Grawemeyer Award for Psychology.

APS Fellow and Charter Member Lynn Nadel and his colleague John O'Keefe explained their theory of the brain's mapping system in a 1978 book, "The Hippocampus as a Cognitive Map" and in subsequent journal articles. Nadel directs the cognition and neural systems program at the University of Arizona. O'Keefe is professor of cognitive neuroscience in the anatomy and developmental biology department at University College London.

Nadel and O'Keefe found that the brain forms a cognitive mapping system in the hippocampus section of its temporal lobe that acts as an internal global positioning system (GPS). Powering the system are "place cells" neurons that use data about distance and directions to pinpoint locations.

In later studies, Nadel used the theory to study Down syndrome, amnesia, phobias and post-traumatic stress disorder, while O'Keefe unraveled how place cells form memories.

Winners of the sixth Grawemeyer psychology prize, the pair were selected from among 37 nominations from seven countries. The Grawemeyer Foundation at the University of Louisville annually awards \$1 million — \$200,000 each for works in music composition, education, ideas improving world order, religion, and psychology. Award founder Charles Grawemeyer, an industrialist, entrepreneur and University of Louisville graduate, wanted to reward powerful ideas or creative works in the sciences, arts, and humanities.