



PM Recognises Insect Intelligence

The Prime Minister's Prize for Science has been awarded to Prof Mandyam Srinivasan of the Australian National University's Research School of Biological Sciences. Srinivasan was the 2001 winner of the *Australasian Science Prize* (*AS*, Nov/Dec 2001, pp. 36–38), and since then has made several follow-up discoveries about bee navigation.

Srinivasan initially explored the scientific question of how bees take off, land and navigate. After several years he realised that how these insects manage to do all this with a brain weighing 0.1 mg might be relevant to robotics.

Srinivasan discovered that bees fly straight by comparing the rate at which images pass each eye, and that they can measure the distance they have travelled based on the way the environment has moved past them.

He also determined that bees land smoothly by monitoring their distance from the landing site and the rate at which this is changing. By keeping the rate of change constant, the bee slows down as it gets closer.

Srinivasan has also made discoveries

about the use of scent memory in bee navigation, a finding that may suggest ways to promote memory recall (*AS*, July 2004, p.8).

“Prof Srinivasan pioneered the understanding of how insects navigate our world,” said Prof Allan Snyder, Director of the Centre for the Mind. “He ingeniously applied these principles of insect navigation to devise novel forms of seeing machines for unmanned planetary explorations and low-flying microfliers for tactical surveillance.”

Srinivasan's experiments are carefully conducted so that insects are free not to participate. However, the lure of better food inside the lab usually overcomes the call of the wild.

He's developed plenty of respect for his subjects in the process. “I've seen bees show frustration, anger, even joy,” he says. “I'm planning a new series of experiments that will determine if they really can experience emotion. If so, bees could transform our view of emotion and cognition across the animal kingdom.”