

Toward a better understanding of human consciousness

September 17 2012

(Medical Xpress)—What consciousness is, and why and how it exists, are some of the oldest questions in philosophy. They are also central to one of the fastest-growing areas of neuroscience.

Associate Professor Nao Tsuchiya, from Monash University's School of Psychology and Psychiatry, is using a variety of neuroscientific methods as he works towards expanding our knowledge of how and why electrochemical activity in the brain gives rise to subjective conscious experience.

"It's really critical to understand what is generating consciousness in order to better understand the meaning of life," said Associate Professor Tsuchiya, who was recently awarded a prestigious Australian Research Council Future Fellowship to investigate the neuronal bases of consciousness and attention.

Consciousness defies easy definition. In simple terms, it is everything we are aware of when we are awake. It is also central to what makes us human.

[Scientific experiments](#) that track [brain activity](#) challenge assumptions and raise new questions. Neuronal activity can be detected even before people are conscious of deciding to act: what are the implications of that for notions of free will? And could a robot, or an [iPhone](#), have consciousness?

As yet, no one can say why we have consciousness. One obvious suggestion – that we need it in order to function in the world – is undermined by such phenomena as "[blindsight](#)", which is observed in some people whose [primary visual cortex](#) is damaged. They cannot see, but will still avoid furniture as they walk about a room.

"There is an alternative pathway from the retina to other areas of the brain, we know that," said Associate Professor Tsuchiya.

"But that seems to be insufficient to create this conscious sensation. These people are processing [visual information](#) without becoming conscious of it or aware of seeing."

Even in undamaged brains, only some [neuronal activity](#) generates consciousness. How much of a role attention plays in that is not yet apparent, and part of Associate Professor Tsuchiya's research over the next four years will be devoted to clarifying the neuronal differences between attention and consciousness.

Although his interest is in the mechanisms of consciousness, his work has wider potential.

"All the reality we have access to is based on the brain," Associate Professor Tsuchiya said.

"And better understanding of how people with mental illnesses such as schizophrenia perceive that reality could have profound implications for improved treatments."

Provided by Monash University

Citation: Toward a better understanding of human consciousness (2012, September 17) retrieved

30 April 2024 from <https://medicalxpress.com/news/2012-09-human-consciousness.html>

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