



Just a Thought

How the brain makes a whole out of parts

Part 2: How do we know when we see something?

Understanding how visual awareness is generated

Researchers at Barrow Neurological Institute in Phoenix have made a breakthrough discovery that puts scientists closer to understanding how visual awareness is generated.

Stephen Macknik PhD, a researcher in the Neurosurgery and Neurobiology departments at Barrow, and his colleagues have discovered that awareness of simple visual objects is generated in a small portion of the occipital lobes of the brain.

Previous studies had ruled out lower stages of the visual system, such as the retina, as capable of generating visual awareness. Those studies left most remaining areas of the brain as potential candidates. The present study places, for the first time, boundaries within the visual system to localise a small area in which visual awareness is generated.

In this connection, Macknik says that "Visual awareness is the feeling that makes the world seem visible. In contrast to a visual reflex, like when our eyes change their focus, visual awareness describes the conscious experience of recognising a stimulus as visible, rather than invisible."

The year-long study utilized functional Magnetic Resonance Imaging (fMRI) technology to scan the brains of 17 volunteers while they were exposed to simple visual objects that appeared either more visible or less visible. Functional MRI measures the position of deoxygenated blood within the brain, which indicates areas where energy is being used. When study participants saw the objects as more visible, the energy required to create the awareness was detected by fMRI, which led researchers to the area in the brain responsible for generating the awareness. The study was published in the *Proceedings of the National Academy of Science*.

References

Understanding how visual awareness is generated, [Neurology/Neuroscience News](http://www.medicalnewstoday.com/medicalnews.php?newsid=36565),
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jennifer.kennedy@chw.edu, St. Joseph's Hospital and Medical Centre
www.stjosephs-phx.org

Monika

Monika Bhatia
Project Manager and Editor, *Quality4Life*
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