

Departmental Seminar

Bonsai Trees in your Head: The Powerful Influence of Reflexive Processes on Goal-directed Decision Making

3:30 p.m. – 4:30 p.m. | December 5, 2016 (Monday)

Social Sciences Chamber | 11/F The Jockey Club Tower | Centennial Campus
The University of Hong Kong



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Abstract

Making decisions in the real world is challenging because choices made now influence what options will be available in the future. As the number of steps in a sequence of choices increases, the potential number of paths through a decision tree increases exponentially. How are we able to make good decisions in the face of such overwhelming complexity? One idea is that the brain uses shortcuts, or heuristics, to reduce computational demands. I will present evidence for the existence of a novel heuristic, "pruning", which entails avoiding even considering entire branches of a decision tree that begin with a large negative outcome, regardless of subsequent outcomes. We found that decision making was profoundly impaired when the optimal choice entailed initially accepting a large negative outcome (Huys et al 2012 PLoS Computational Biology 8(3):e1002410); and computational modelling showed that this bias could not be explained by other influences such as poor planning or loss aversion. A subsequent neuroimaging study confirmed this behavioural effect, and suggested that pruning behaviour is driven by activity in brain regions implicated in emotional processing. These results will be discussed with reference to a contemporary theoretical framework that relates Pavlovian behavioural inhibition to serotonin and depressive symptoms.

~All are Welcome~