



SAID BUSINESS SCHOOL, University of Oxford

SEMINAR SERIES / MICHAELMAS 2011

Convenors: Felix Reed-Tsochas, Institute for Science, Innovation and Society,
Saïd Business School
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Seminar webpage:
www.cabdyn.ox.ac.uk/complexity_seminars.asp

Sandwiches and
drinks will be
provided

Please note: although
the seminar
programme detailed
was correct at time of
printing, seminar
arrangements are
subject to change -
for the latest
information, please
check the seminar
webpage.

Tuesday 8th November
(12.30pm - 2.00pm) James Martin Seminar Room

Prof Edward Bullmore
Department of Psychiatry, University of Cambridge

'The economy of brain network organization'

ABSTRACT

Brains are expensive, incurring high material and metabolic costs relative to their size, despite many aspects of brain network organization being largely explained by a parsimonious drive to minimize fixed and running costs. However, brain networks also have high topological efficiency, robustness, and other advantageous properties that may entail a wiring cost premium. We propose that brain organization is shaped by an economic trade-off between pushing down costs versus allowing the emergence of adaptively valuable topological properties. This economical trade-off between wiring cost and adaptive value is re-negotiated over long (decades) and short (millisecond) time scales as brain networks evolve, grow, and adapt to changing cognitive demands. An economical analysis of brain network disorders highlights the vulnerability of the most costly elements of brain networks to pathological attack or abnormal development.

