



SAID BUSINESS SCHOOL, University of Oxford

SEMINAR SERIES / TRINITY 2010

Convenors: Felix Reed-Tsochas, Institute for Science, Innovation and Society,
Saïd Business School
Eduardo López, 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 11th May
(12.30 - 2.00pm) James Martin Seminar Room

Dr Mauro Mobilia
Department of Applied Mathematics, School of Mathematics,
University of Leeds

'Large Fluctuations and Fixation in Evolutionary Games with Non-Vanishing Selection'

ABSTRACT

In this seminar, I will present a WKB (Wentzel-Kramers-Brillouin) based theory that allows to account for non-Gaussian behaviour in evolutionary processes. This approach is particularly suited to investigate phenomena induced by large fluctuations, such as extinction or fixation. The latter term refers to the possibility that a few mutants take over an entire population and is closely related to the key concept of evolutionary stability. The theoretical approach is illustrated in the framework of evolutionary games to study fixation under non-vanishing selection. Here, as an application of the WKB approach, the mean times and probability of fixation for finite selection intensity (i.e. beyond the usual weak selection limit), as well as the quasi-stationary distribution, are computed. These results are compared with the predictions of the Fokker-Planck (or forward Kolmogorov) equation, which demonstrates that the WKB-based theory is superior to the diffusion approximations when the selection intensity is finite.