



SAID BUSINESS SCHOOL, University of Oxford

SEMINAR SERIES / TRINITY 2011

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

Tea, Coffee and cakes 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.

Monday 16th May

(5.00 - 6.30pm) James Martin Seminar Room

Roger Guimerà

Universitat Rovira i Virgili, ICREA Research Professor, Chemical Engineering

'Modules and statistical models of complex networks: from systems biology to the US Supreme Court'

ABSTRACT

In complex systems, individual components interact with each other giving rise to complex networks, which are neither totally regular nor totally random. Because of the interplay between network topology and dynamics, it is crucial to characterize the structure of complex networks.

Although during the last decade significant progress has been made in the study of complex networks, we are still far from the ultimate goals of: (i) characterizing real-world complex networks; (ii) understanding the precise mechanisms responsible for the observed topology; and (iii) evaluating the impact of the structure of the network on the dynamics of the system. The two main impairments to achieve these goals are: (i) most network data are very unreliable, that is, for most systems there is uncertainty as to what is the real structure of the network; and (ii) we lack the tools to extract the relevant information contained in the structure of networks, and to evaluate the impact of network structure on a system's dynamics.

In my talk, I will discuss how we can use very general properties of complex networks to address these two very prominent network problems. I will illustrate the methods with examples from systems biology (metabolome and proteome) and from the social sciences (the voting patterns of US Supreme Court justices).



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