

Trinity Term 2007

COMPLEX ADAPTIVE SYSTEMS GROUP SEMINAR
Saïd Business School, University of Oxford



Convenors:

Felix Reed-Tsochas, *Saïd Business School*

Jukka-Pekka Onnela, *Physics Department & Saïd Business School*

Our meetings intend to provide a forum for rigorous research (in a broad range of disciplines) focusing on complex adaptive systems, using methods and techniques such as agent-based modelling and complex network analysis. Since potential areas of application for such approaches can be located across the social, natural and engineering sciences, our aim is to involve participants from a wide range of departments in Oxford. We welcome talks which focus on particular areas of application and associated technical issues, but also encourage contributions which address more fundamental conceptual or mathematical problems. The CASG Seminar Series is one of the activities of the CABDyN Research Cluster (<http://sbs-xnet.sbs.ox.ac.uk/complexity/>).

Tuesday 15th May 12.30 – 2.00 pm

Seminar Room A

Dr Roger Guimera

**Department of Chemical & Biological Engineering
Northwestern University**

Cartography of complex networks: from organizations to the metabolism

ABSTRACT

The way we look at the world has changed in the last decades. Only a few years ago, a consultant working for a company would hand out questionnaires to a few employees and wait for their answers to assess the problems in a certain department; today, the same consultant can analyze the origins and destinations of all the emails sent during a year by all the employees of the company. Similarly, a cancer biologist, who used to spend years working on a pathway involving a few proteins, has now access to the expression profiles of every single protein in an organism.

This change of perspective is not just a matter of 'quantity.' Complex systems, such as organizations or organisms, cannot be understood by simply understanding each of its constituent parts---an organization is more than a collection of individuals or departments, and an organism is more than a collection of molecules, cells, or organs. As the Nobel laureate Phil Anderson put it, 'more is different.'

Interpretation of huge system-level datasets remains, however, a major scientific challenge. In my talk I will discuss recent advances in the search for a methodology that enables us to extract and display information contained in complex interaction networks. I will use different social, technological, and biological systems as examples.

Sandwiches and drinks will be provided

For further information contact felix.reed-tsochas@sbs.ox.ac.uk

Seminar webpage: http://sbs-xnet.sbs.ox.ac.uk/complexity/complexity_casg.asp