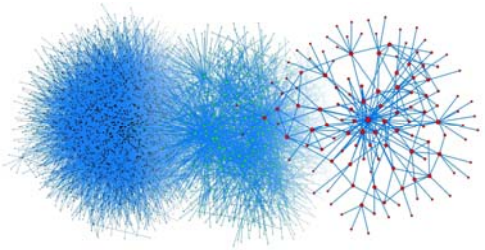
THE JAMES MARTIN
21ST CENTURY SCHOOL
UNIVERSITY OF OXFORD

21ST CENTURY SCHOOL SEMINAR SERIES

"COMPLEXITY AND SYSTEMIC RISK"

THURSDAY 11FEBRUARY 2010, 3.30-5PM



Professor Mike Batty
Director, Centre for Advanced Spatial Analysis, University College London

"Anticipating Future Complexity: Are Systems Such as Cities Getting More Complex?"

Summary: In this talk, I will argue that cities are getting more complex as their residents acquire more and more ways in which they can interact with one another. New technologies enable individuals to repackage their time and space in countless different combinations, and the flexibility afforded by such innovations makes possible many new ways in which individuals might react to this complexity. Behavioural change is considerably greater in the modern city than the medieval. Little wonder that there is such interest in cities that grow from the bottom up, question of emergence and scale, all of which feature in the rise of the sciences of complexity.

In fact I will not dwell very much on ways in which complexity is increasingly but argue instead that to get to grips with understanding it, we need much more powerful tools to inform our understanding. Tools that involve models of different kinds from many different perspectives. I will show four rather different approaches to illustrate how we can 'probe' this complexity. First I will begin with our work on energy change and climate change in terms of the distribution of population in London, introducing the basic notion that we need to visualise such complexity as effectively as possible, involving a variety of digital technologies. Second I will turn to a very simply model of how cities grow from the bottom up which illustrates how we can model emergence and the influence of scale. Third I will illustrate how we can model London in a rather different way as a geometric structure which we can navigate and tag, as a virtual city. Fourth I will illustrate at quite a different scale how we can explore what is happening to world cities and some of the paradoxes that pertain to the way big cities rise and fall in the world pecking order while at the same time maintaining a consistent scaling.

These four snapshots will illustrate how we are implementing various conceptions of change in cities using various computer models. These examples are all rather different but they raise the prospect that to grapple with the evident complexity that cities demonstrate we need a variety of approaches. The challenge of course is to be able to synthesise the information these and the many other approaches that are evident in building an understanding of cities and their problems. This is one of the challenges of complexity science.

The seminar takes place in the Old Indian Institute Building
(corner of Holywell and Catte Streets).
www.cabdyn.ox.ac.uk | www.21school.ox.ac.uk

Seminar series convened by Dr Felix Reed-Tsochas and
the CABDyN Complexity Centre,
in association with the Institute for Science, Innovation

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