

The Institute of Mathematics and its Applications

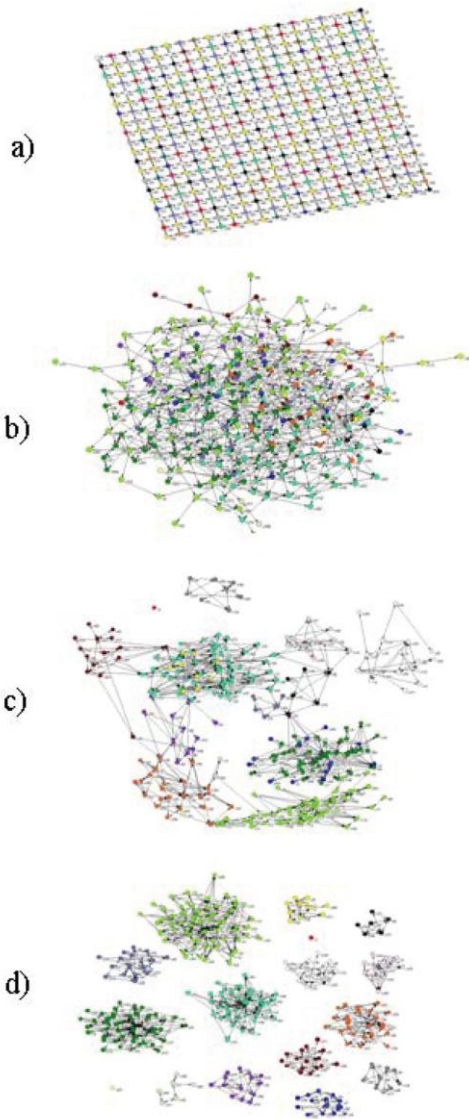
West Midlands Branch

Complex Contagions

by

Dr Damon Centola,

Massachusetts Institute of Technology



Network science is a growing field of interest ranging from sociology to physics. A primary goal of this field is to understand how the connectedness of a population (the topological structure of social ties) affects whether, and how fast, information, diseases, and behaviours will spread. Damon Centola's research on the dynamics of diffusion across social networks has implications for developing public health interventions, promoting products, and understanding cultural diffusion and social integration. His core sociological interest is how individual actions aggregate to produce (often unexpected) collective outcomes. This includes the mobilization of social movements, the self-organization of ethnic communities and cultural enclaves, the spread of health behaviours (such as vaccination, dieting, and condom use), and the coordination of collective beliefs (such as religious extremism and social sanctioning practices). See:

<http://dcentola.scripts.mit.edu/>

Note: Figure 3 illustrates the co-evolution of cultural traits and physical groups in the co-evolving model for $N=400$, $F=3$, and $q=20$: Snapshots of the network are shown at times (a) $t=0$, (b) $t=2,500$, (c) $t=25,000$, and (d) $t=500,000$.

Homophily, Cultural Drift, and the Co-Evolution of Cultural Groups,

Journal of Conflict Resolution
Volume 51 Number 6
December 2007 905-929

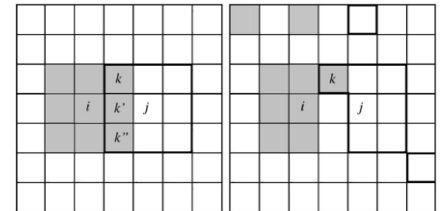


Fig. 2. Overlap between neighborhoods in (left) a regular lattice and (right) after rewiring. Rewiring decreases the overlap between i and j making cascade propagation more difficult.

Cascade dynamics of complex propagation

Physica A 374 (2007) 449-456

**Monday 15th
March 2010**

**University of
Warwick
Coventry
CV4 7AL**

**Zeeman building
(Maths and Stats)**

B3.02

6pm for 6.30pm

**Non-members also
most welcome**

Further information M.Barons@Warwick.ac.uk