

Lex Zandee

Complexity-NET Outreach workshop

9-10 November 2010

# NWO-theme Dynamics of Complex Systems

Netherlands Organisation for Scientific Research



# Long term retrospective

Complexity & Complex Systems proposed by CREST (EU Scientific & Technical Research Committee)

NWO involved in FP6 CA (Coordination Action) ERA-Net Complexity-Net

2000      2001      2002      2003      2004      2005      2006      2007      2008

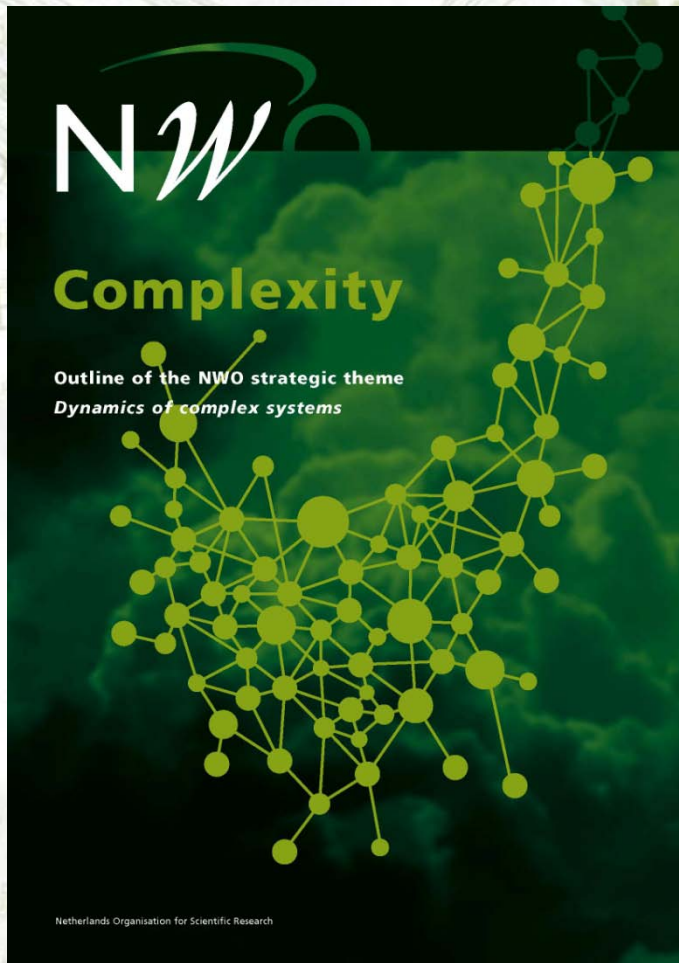
NWO involved in FP6 SSA (Specific Support Action) ERA-Net Complexity-Net

NWO strategy: NWO Theme Complexity

# NWO & Complex Systems

- Individual basis (Open Competition)
- Programmes
  - Computational Life Sciences, 2003–2009, M€ 5.5
  - Physics of granular matter, 2004–2011, M€ 3.5
  - Collective and cooperative statistical physical phenomena, 2001–2009, M€ 6.2
  - Computational Science, 2000–2006, M€ 4.1
  - Molecule to Cell, 2001–2009, M€ 8.1
  - Dynamics of Patterns, 2005–2009, M€ 1.4
  - Climate variability, 2003–2010, M€ 5,6

# The green book



- Micro-macro
  - emergence
- Networks
  - dynamics on networks
  - dynamics of networks
- Predictability
  - relation with chaos
  - from observation to prediction

# NWO-theme Dynamics of Complex Systems

## Industrial Involvement



The following companies have financially contributed to the Complexity Call for proposals 2009:

### **LOGISTICS:**

NS (Dutch Rail)

### **TECHNOLOGY:**

Chess  
Cordis

### **FINANCE:**

Equens  
Dutch National Bank

# Call for proposals

3 compartments:

- Research questions of the sponsors
- Society or industry relevant research (application driven)
- Basic research (new ideas)

Educational and networking programme

- 100 hours per year (workshops, courses)

Total budget: **M€ 6**

# Projects

## □ LIFE

Host-pathogen co-evolution from an immunological and epidemiological perspective

Rob de Boer, Utrecht University

Identification of synaptic gene networks in complex brain disorders using a Bayesian framework

Niels Cornelisse, Free University Amsterdam medical centre

Coupling of self-assembly and metabolism in protocells

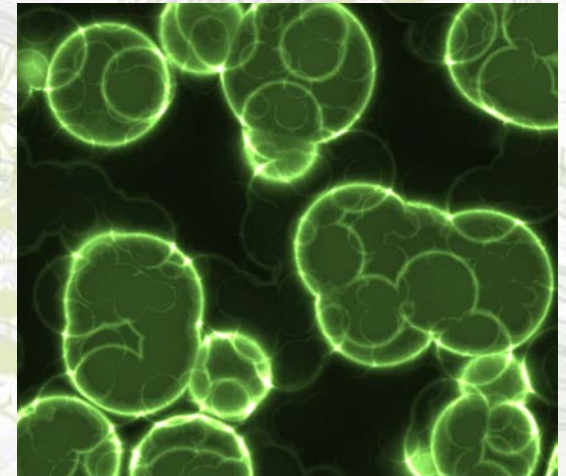
Jan van Esch, Technical University of Delft

The neuronal network organization of the biological clock

Johanna Meijer, Leiden University medical centre

Stability and rewiring in adaptive neuronal networks

Arjen van Ooyen, Free University Amsterdam



# Projects



## ❑ FINANCE

Understanding financial instability through complex systems

Cars Hommes, University of Amsterdam

## ❑ LOGISTICS

Complexity in public transport: passenger behaviour and system optimization

Leo Kroon, Erasmus University Rotterdam

# Projects



## □ EARTH

Predictability of Kuroshio current path transitions  
Henk Dijkstra, Utrecht University

Critical transitions and early-warning signals in spatial ecosystems  
Arjen Doelman, Leiden University

# Projects

## □ FOOD

Food for thought and thought for food: the local-global entanglement of the slow food movement

Arnaud Lagendijk, Radboud University Nijmegen

Complexity and stability in food webs: the role of nutritional quality and infectious disease agents

Peter de Ruiter, Wageningen University & Research Centre

## □ FUNDAMENTAL

The emergence of self-regulating systems under variable environments

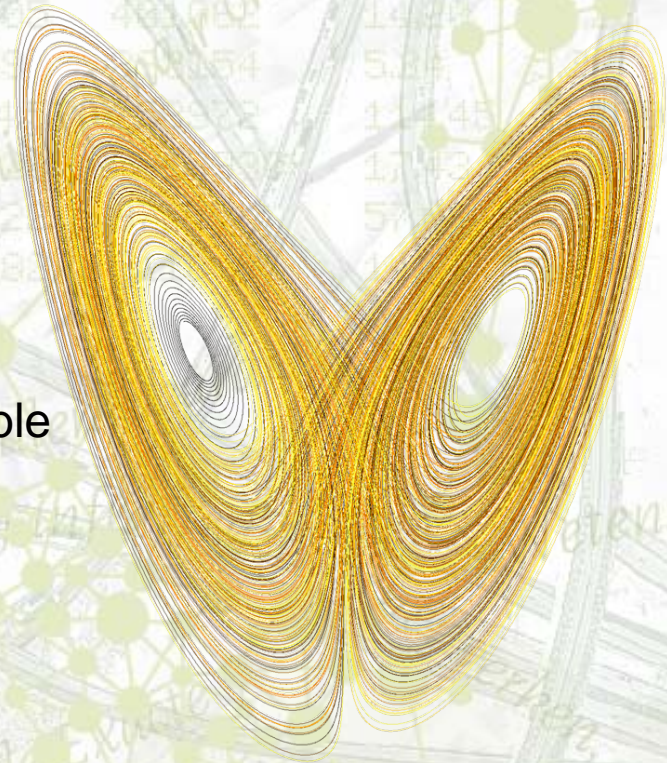
Koen Frenken, Technical University of Eindhoven

Correlating fluctuations across the scales

Mark Peletier, Technical University of Eindhoven

Complex dynamic arrest: a novel phase transition in space-time

Peter Schall, University of Amsterdam



# Future activities

- ❑ **Community building**
- ❑ **Summer school**
- ❑ **Future calls, theme focussed**