

27 LSE Complexity Group Projects 1997-2008

2008

27. SOCIONICAL EU PROJECT

The LSE is one of the main partners in an EU project under the 7th Framework, led by Prof. Dr Paul Lukowicz, University of Passau, Germany, which was approved by the Commission in July 2008. This is a socio-technical project focusing on Ambient Intelligence based smart environments in transportation and emergency/disaster. Below is a brief abstract. It is an FP7 Integrated Project with 14 partners, funded by FET (Future Emerging Technologies), with a budget of **over 5.8m euro**. The LSE Budget is approx 480K euro, which is a significant proportion of the total, over 48 months. The project was evaluated 3rd with 12.5/15 points. The Complexity Group is the LSE lead, with the PSSRU as the other LSE contributor.

“We will develop Complexity Science based modelling, prediction and simulation methods for large scale socio-technical systems. We focus on the specific example of Ambient Intelligence (AMI) based smart environments. A key component of such environments is the ability to monitor user actions and environment and to adjust its configuration and functionality accordingly. Thus, the system reacts to human behaviour while at the same time influencing it. This creates a feedback loop and leads to a tight entanglement between the human and the technical system. At the same time there is dynamic, heterogeneous human-human, human-technology, and technology-technology communication leading to ad-hoc coupling between components and different feedback loops. The project will study how global properties and emergent phenomena arise in AmI based socio-technical systems from such local feedback loops and their coupling on two concrete scenarios: transportation and emergence/disaster.”

26. ESRC RESEARCH SEMINARS COMPETITION 2007/8

Complexity as the New Framework for Policy: the LSE Complexity Group will lead the seminar series with King’s College London, Lancaster, Cranfield, the Open University and Oxford Brookes. The series will include 6 seminars over 2 years. The first seminar in November 2008, will be held at LSE and organised with King’s College London, on ***‘Complexity and policy: The global governance of new health technologies’***. One referee evaluated it as “an outstanding proposal”.

“The seminar series will bring together UK and EU policy makers and international leading researchers, across disciplines, to explore the application of complexity theory, to public and business policy. The seminars alone, however, will not be able to meet the needs of participants or the broader ESRC mission objectives (which include the development of strategic and applied

research and related postgraduate training; the advancement of knowledge; contribution to the economic competitiveness of the UK; and the effectiveness of public policy). To do this we have three ambitious aims. One is to use the seminars to create an active network of policy makers and academics in multiple policy domains; the second is to facilitate the setting up of a series of related joint research project proposals with the policy makers; and thirdly to develop research capacity by involving post-grads, post-docs and early career researchers, who will develop the ideas further in their own work.”

25. ECOWAS PROJECT

The LSE Complexity Group has been invited by the Humanitarian Futures Programme at King’s College London, to take an active role in a project with the Economic Community of West African States.

24. MONAMI EU PROJECT

The LSE Complexity Group has been invited by the LSE’s PSSRU (part of the Department of Social Policy) to take an active role in this EU funded project, which provides new technology to the disabled in Europe.

23. A PILOT PROJECT WITH GLAXOSMITHKLINE to look at the global-local challenge in IT. A series of 13 interviews were undertaken in April 2008. The findings will be used as the basis for a larger project with several organisations, to be submitted under the EPSRC Digital Economy programme call.

22. COURSE FOR LSE PHD STUDENTS, SPONSORED BY TLC

A 2-day course was held on 31 March and 3 April 2008 for LSE PhDs. This was again oversubscribed and the evaluation was ‘excellent or very good’.

The LSE Complexity Group is externally funded and has been awarded research projects by EPSRC, ESRC, AHRC, EC, industry and government departments. The funding raised since 1997 has been more than £2.5m

Projects submitted/under development/ (July 2008)

1. We have submitted (April 08) a proposal under responsive mode to the ESRC on *Emergent Visions: Art, Complexity & Collaborative Creation*. Three Research Councils have expressed interest in co-funding it (if it goes through the refereeing process); the EPSRC, AHRC and ESRC. They have agreed between them that we should submit to ESRC, but the referees will be chosen by all three. We will be working with a group of artists to study collaborative creation, and in the process (a) refine some key concepts in the theory of complex social systems (e.g. co-evolutionary dynamics, exaptation, exploration of the space of possibilities, self-organisation and emergence); (b) develop a methodology for studying co-evolutionary dynamics, working with mathematicians from the Open University and a psychologist; (c) identify some of the generic, multiple inter-acting conditions (cultural, social, technical, physical, political, economic, etc) that together create an environment that facilitates innovation and collaborative creation in areas of application outside art. We will also be working with the Science Museum and the Florence Trust. Approx £1.5m

2. An outline proposal has been submitted to the Nuffield Foundation entitled: ***Addressing Apparently Intractable Problems in the Voluntary Sector: A Complexity Theory Approach***. The LSE Complexity Group has been working with major organizations in the private and public sectors for 14 years to help address apparently intractable problems using complexity theory. It proposes to use this experience and expertise, to work on a collaborative action research basis with organizations in the voluntary sector to help them address problems such as youth knife crime in areas of deprivation; or issues of debt and alcohol abuse.
3. A project with the Humanitarian Futures Programme (HFP) at King's College London, will be submitted to the ESRC with possible joint funding by the EPSRC and ESRC. The HFP work with governments in Africa, Asia, etc and with local UN teams to help them become more adaptive, anticipatory and innovative in addressing crises. We will (a) explore the relevant complexity principles (far from equilibrium, critical points, exploration of possibilities) and power dynamics; (b) refine our existing tools and methods and develop a joint methodology; (c) study the different conditions that push some countries over the edge (when they cannot deal effectively with a new crisis) with those who have been able to adapt to the new conditions. This could have some significant impact in areas of conflict or for countries facing new crises. Approx. £1m.
4. Looking at the Local and Global challenge of IT. We held a workshop at LSE on 23 October 2007 with Ford, GSK, BP, DHL and Corus/Tata Steel to look at the local-global dilemma. This has led to a pilot project with GSK starting in April 2008. We will use the findings as the basis for a further workshop and possibly a larger project, to be submitted to the EPSRC under the Digital Economy programme call. Approx. £1m.

Books in Preparation

'Organisations That Learnt How To Change: Applying Complexity Theory' with Elsevier

'The Challenges of Leadership in the 21st Century: A Complexity Theory Perspective' with Springer

Seminar Series

The Group has been organizing a series of seminars, since 1992. The series started with a focus on Strategy and became the Complexity Seminar Series in 1995. A list of all seminars, conferences, workshops, etc as well as the current series, are at www.lse.ac.uk/complexity

The Group was awarded funding by the LSE, to organise a seminar that will disseminate LSE research and engage with business and government. The one-day seminar on ***The Challenges of Leadership in the 21st Century***, was held on 18th July 2008. The speakers included Keith Butler-Wheelhouse, recently retired CEO for 11 years in the Smith Group plc; Lord David Currie, Chairman of Ofcom; Dr Paul Steven, recently retired VP of IT in GSK; Kate Hopkinson Director of Inner Skills; and Prof Eve Mitleton-Kelly reporting on a series of interviews with FTSE 100 CEOs and senior Civil Servants on the challenges of leadership.

Earlier Complexity Group Projects **Approx. £2m (mainly pre-FEC)**

20 & 21. ECiD: Embracing Complexity in Design, under the Designing in the 21st Century initiative. Two awards 2005-2008, funded by AHRC & EPSRC. Led by Prof. Jeff Johnson Open University; the LSE Complexity Group was a member of the initial cluster and EMK was Co-Investigator in the project, which was the second award.

19. High Performing Organisations, a project with the NHS (National Health Service) and the Society for Organisational Learning (SOL-UK). A longitudinal study between 2004-7 working with two hospitals in SW London. Both hospitals started with significant deficits, both reduced them and one is now in surplus.

The NHS Institute for Innovation and Improvement seeks to provide the NHS with ideas and approaches to change that are effective, evidence based and inline with the latest thinking and practice. As part of that bigger project, the LSE Complexity Group has been carrying out a set of interviews with two hospitals that have shown significant improvement and innovation. The objective is to learn from their experience and to understand some of the *underlying principles for successful improvement and innovation*, to help other NHS organisations facing a similar challenge.

17. Network Development Group Project with GlaxoSmithKline IT Team.

A third project with GSK, between January and December 2007. We worked with the whole IT team of 50 to help them develop their networking skills; and with the new Management Team to introduce them to complexity theory, to enable them to use it in practice in their daily operations. The project was evaluated highly by all participants, by the Management Team and the VP of IT. The research team met in March 2008 to identify possible publications. At least two publications will be submitted to refereed journals. This is also likely to provide a case study for one of the Information Systems Journals. The GSK VP of IT has led several seminars at LSE and has spoken about this and earlier projects at international conferences, workshops and seminars.

16. Challenges of Leadership in the 21st Century

A project based on a set of interviews, conducted in December 2006 and Jan-Feb 2007, with CEOs in the FTSE 100 companies and Senior Civil Servants. The findings, using complexity theory, were presented at two workshops in 2007 and will be published as a book. A third one-day seminar was held at LSE on 18th July 2008.

15. ESRC, Learning from Complexity: Enabling Governance Frameworks

ESRC 6-month project during 2007, to look at Corporate Governance frameworks from a complexity perspective. The LSE Complexity Group was working with the Universities of Birmingham, Sheffield, Leicester and Portsmouth. The team met in April 2008 to look at possible publications. Four papers to be submitted to refereed journals and one monograph were identified as potential outputs.

14. EPSRC Taught Course for Researchers, on Complex Social Systems

The EPSRC funded the Complexity Group to offer two 7-day courses with 28 participants. Two 7-day courses were held in 2006 and in March 2007. A third 3-day course was also held in December 2007. The courses were set up to train researchers in academia and industry, to use complexity theory, network theory and agent-based modelling. All three courses were heavily oversubscribed and attracted students from engineering, the natural and social sciences and from countries around the world. We were funded to offer 28 places, but were able to offer over 100 places, as students not eligible for a free place were able to pay a fee.

13. European Commission 2005-2007 Member of ONCE-CS Coordination Action in complex systems led by Prof. Jeff Johnson, Open University.

12. European Commission 2002-2006, *Network of Excellence in Complex Systems* called *EXYSTENCE*, funded by the Future Emerging Technologies section of the EC. EMK was Coordinator of Links with Industry and Government and organised seminars and workshops throughout Europe, including Bilbao, Helsinki, Grenoble and London.

10 & 11. Two projects in 2005-6 with GSK working with the top management team in IT.

One project introduced the IT Management Team to complexity theory and helped them to use the concepts in the daily operations. The other project identified the multiple underlying interacting conditions that together created the enabling environment that achieved high alignment between the IT team and the pharma UK business.

9. Leadership in the Environment Agency.

A project in 2005, in association with SOL-UK looking at leadership in one part of the EA.

8. EPSRC, ‘Enabling the Integration of Diverse Socio-Cultural and Technical Systems within a Turbulent Social Ecosystem’ called ICoSS (Integration of Complex Social Systems)

A 3-year project (2001-2004) under the Systems Integration Initiative funded by the EPSRC. It generated 26 publications including 3 books; an agent based model and simulator; and 67 presentations. The five research partners were: Rolls-Royce Marine, NHS, Norwich Union Life, Shell and BT.

5-7. Various projects with the Humberside TEC, Mondragon Cooperative Corporation (Basque Country), and Shell. The Complexity Group has also worked on (a) the regeneration of communities, (b) organizational learning, (c) the emergence of new organizational forms, the ‘design’ of organizations & co-evolutionary sustainability, (d) diversity, (e) art and complexity.

4. EPSRC, ‘The Complexities of Product Definition - Identifying the Customer Requirements’

A collaborative 2-year (2000-2002) project with Warwick Manufacturing Group, Cranfield Ecotechnology Centre and the Aerospace industry, funded by EPSRC. The project started with the problem of the time taken between the initial product definition stage and

manufacturing. It found that key elements were inter-organisational relationships, risk and trust between the firms in the supply chain.

2 & 3. 'The Implications of the Theories of Complexity for the Co-evolution of the Business Process and Information Systems Development'

Two projects under the IT Legacy Systems Programme, funded by EPSRC. A preparatory project in 1997 was followed by a 3-year project in 1998. Both projects looked at the relationship between the IT professionals and the business and the conditions that facilitated their co-evolution. The research partners included Citigroup in New York and London, Legal & General, and DTI.

1. ESRC support from the Resource Centre at Warwick University, to run the Complexity Seminar Series, 1997-8

LSE Complexity Group

The Complexity Group at the London School of Economics was set up in 1994 to develop a theory of complex social systems and an integrated methodology to address practical problems. The Group has been working with organisations in both the private and public sectors to address apparently intractable problems. The analysis method developed, based on complexity theory, helps to identify the multiple underlying interacting causes that create a *'problem space'* and makes it possible to address such problems. From this in-depth understanding, organisations can progress to develop *'enabling environments'* that integrate multiple contributing conditions (cultural, social, technical, political, physical, legal, economic, etc.) that help them to co-evolve in a sustainable way with a changing environment.

Some of the organizations that the LSE Complexity Group has worked with/is working with, are: AstraZeneca, BT, BAe Systems, Cabinet Office, CitiGroup (New York & London), Department of Trade & Industry, the Environment Agency, GlaxoSmithKline, the Humberside TEC, Legal & General, Ministry of Defense, Mondragon Cooperative Corporation (Basque Country), the National Health Service, Norwich Union Life, Office of the Deputy Prime Minister (now DCLG) Rolls-Royce (Aerospace & Marine), Shell (International, Finance & Shell Internet Works), the World Bank (Washington DC) and several companies in the aerospace industry.