

The Difference A Complexity Perspective Can Make to How Policy Makers Address Complex Challenges

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Background

- The LSE Complexity Group has been working for over 20 years with research partners in the private, public and voluntary sector
- To develop, test and refine a methodology underpinned by complexity science
- The core of the methodology is qualitative, but includes modelling (ABM), art and a psychology tool

Research Partners & Awards

Awards: 5 EPSRC; 3 ESRC; 2 AHRC; 3 EU; 1 ECOWAS = 12 & 21 industry/public sector projects: 4 NHS projects (2004 – 2007 & 2014); 1 Environment Agency (Defra) on leadership (2005); 4 GSK projects (2005-2008); 1 DWP on leadership (2007); 1 HSE on the relationship between policy and outcomes (2010); 2 RBL projects on governance of a new project awarding loans and grants to ex-service personnel (2010-11); 1 LARCI (Local Government), 3 FCO (Foreign & Commonwealth Office); 3 Dartington Trust, 1 UNEP on gender asymmetries and decision making
The above 33 projects have raised over £10m.

Research Partners include AstraZeneca, BT, BAe Systems, Cabinet Office, Citibank (New York & London), City of London Police, Dartington Trust, DWP, Defra, FCO (Indonesia), GlaxoSmithKline, Home Office, Humberside TEC, Legal & General, London Emergency Services (Fire, Ambulance, Police), MoD, Mondragon Cooperative Corporation (Basque Country), the NHS, Norwich Union Life, Rolls-Royce (Aerospace & Marine), Royal British Legion, Shell (International, Finance & Shell Internet Works), Transport for London, UNEP, the World Bank (Washington DC)

The projects addressed the following topics

- Alignment between IT and the rest of the business;
- Post M&A integration;
- Leadership in the NHS, Defra, and many other organisations in the private and public sectors;
- Regeneration & sustainable development in communities;
- Organizational learning;
- Innovation in the private and public sectors;
- Disaster risk reduction in West African States;
- A new framework of governance for government using complexity theory with 5 Governments;
- Corporate governance – co-authored a book
- Evacuation dynamics after a major disaster – large 4-year EU project;
- Organisational transformation of a government agency in Jakarta to help them address deforestation in Indonesia;
- Land Trust in Ireland to scale up successful activity in Galway;
- Employee engagement and training to facilitate engagement;
- Pandemics & conflict – 5 workshops working with world experts;
- Gender & decision making in ocean and inland water communities.

+ Seminar series since 1992 & training courses

Advisory Positions

- Advisor to UNEP (UN Environment Programme) GRID-Arendal, Norway
- Advisor to UN OCHA (Office for the Coordination of Humanitarian Affairs)
- Member of the World Economic Forum Global Agenda Council on Complex Systems (2012-2014)
- Advisor to government agency in Jakarta, Indonesia (2012-2013)
- Scientific Advisor to the Governments of Australia, Brazil, Canada, Netherlands, Singapore and UK (2010-11)
- Advisor and Evaluator of the relationship between policy and outcomes to HSE (2010)
- Advisor to Royal British Legion on the governance of a new national project delivered locally by multiple partners (2010-11)
- Advisor to ECOWAS (Economic Community of West African States) Commission, on Disaster Risk Reduction, in association with King's College, Humanitarian Futures Programme (2008-9)
- Advisor to Board of GlaxoSmithKline, Pharma, UK (2006-7)
- Advisor to Board of Rolls-Royce Marine (2004)
- Advisory Board Member on Complexity, Citibank, New York (1997-8)
- Advisor to the Czechoslovakian Ministry of Education (1988)

PUBLICATIONS: Edited or co-authored 5 books; 28 papers & chapters; www.lse.ac.uk/complexity; + more than 115 unpublished Reports

Outline of Presentation

- Outline some tools & methods
- Describe a case study working directly with the problem owners
- A different application of the methodology, working with experts, to look at pandemics & conflict
- Future developments

How can Complexity Thinking Help Policy Makers to Address Complex Challenges

1. By understanding organisations, economies, societies, etc. as *complex social systems* policy makers can use a complexity perspective to:
e.g. facilitate collaboration, learning, innovation, the regeneration of communities, sustainability, etc.

The complexity characteristics of organisations are often *inadvertently constrained* and limit e.g. innovation and the creation of new order

2. Can address *apparently intractable problems* such as organisational transformation, political conflict, major geo-political issues, climate change, etc., by using approaches based on the logic of complexity

To effectively change organisations by *co-creating enabling environments* that co-evolve with their changing external environment

Addressing Apparently Intractable Problems

- Requires the accurate identification of the complex problem space
- Complex problem
 - often *appears intractable* because of the way it is addressed
- **Focus on single causes** - when such problems arise from the interaction of multiple, underlying, inter-related causalities
- **Or a single dimension** – when complex social systems are multidimensional
 - cultural, organisational, technical, physical, political, financial, etc.
 - it is NOT only a matter of finance, or culture or new technology, etc.
 - cannot focus on one dimension to the exclusion of the others

EMK Complexity Methodology

- Identifies the multiple dimensions and the issues within them
- Not just a *list* of issues within a set of dimensions
- Clusters of *key inter-related* issues
- And their *co-evolutionary dynamics*
 - *Co-evolution is defined as reciprocal influence, which changes the behaviour of the interacting entities*
- Once these clusters have been identified they can be addressed as part of an *enabling environment*

Some examples

- **Individual organisations:** RRM, GSK, NHS, etc.
- **States:** ECOWAS on disaster risk reduction
- **Governments:** Governance framework for government*
- **Corporate Governance** – co-authored book*
- **Global issues:** pandemics & conflict (WEF); deforestation in Indonesia (FCO); gender and decision making in ocean and inland water communities* (UNEP)
 - *Note: in references

Tools & Methods

1. Discussion with the key stakeholders
 - To identify their perception of the problem/challenge
2. In-depth semi-structured interviews: individual & group
 - Based on a set of topics not a questionnaire
 - Interviewees encouraged to reflect on those topics
3. Individual analysis
 - To identify the:
 - Common themes
 - Dilemmas: equally desirable objectives that appear not to be achievable at the same time
 - Key questions
 - Underlying assumptions

4. Group analysis & identification of key clusters
 - of themes, dilemmas, questions and underlying assumptions

5. Report based on interview analysis with recommendations & entry points for action
 - most recent Report to UNEP Jan 2015

All the above are based on interviews

6. Introduction to complexity theory

7. Reflect back workshop

Working with the problem owners

8. A series of facilitated workshops over several days, with 12-30 persons across the hierarchical structure to

- identify of the multiple-dimensions in the problem space
- their co-evolutionary dynamics
- e.g. GSK, Government Agency in Jakarta

9. Preparation for the *Enabling Environment* (1-2 days)

10. Implementation with continuing support

To Summarise

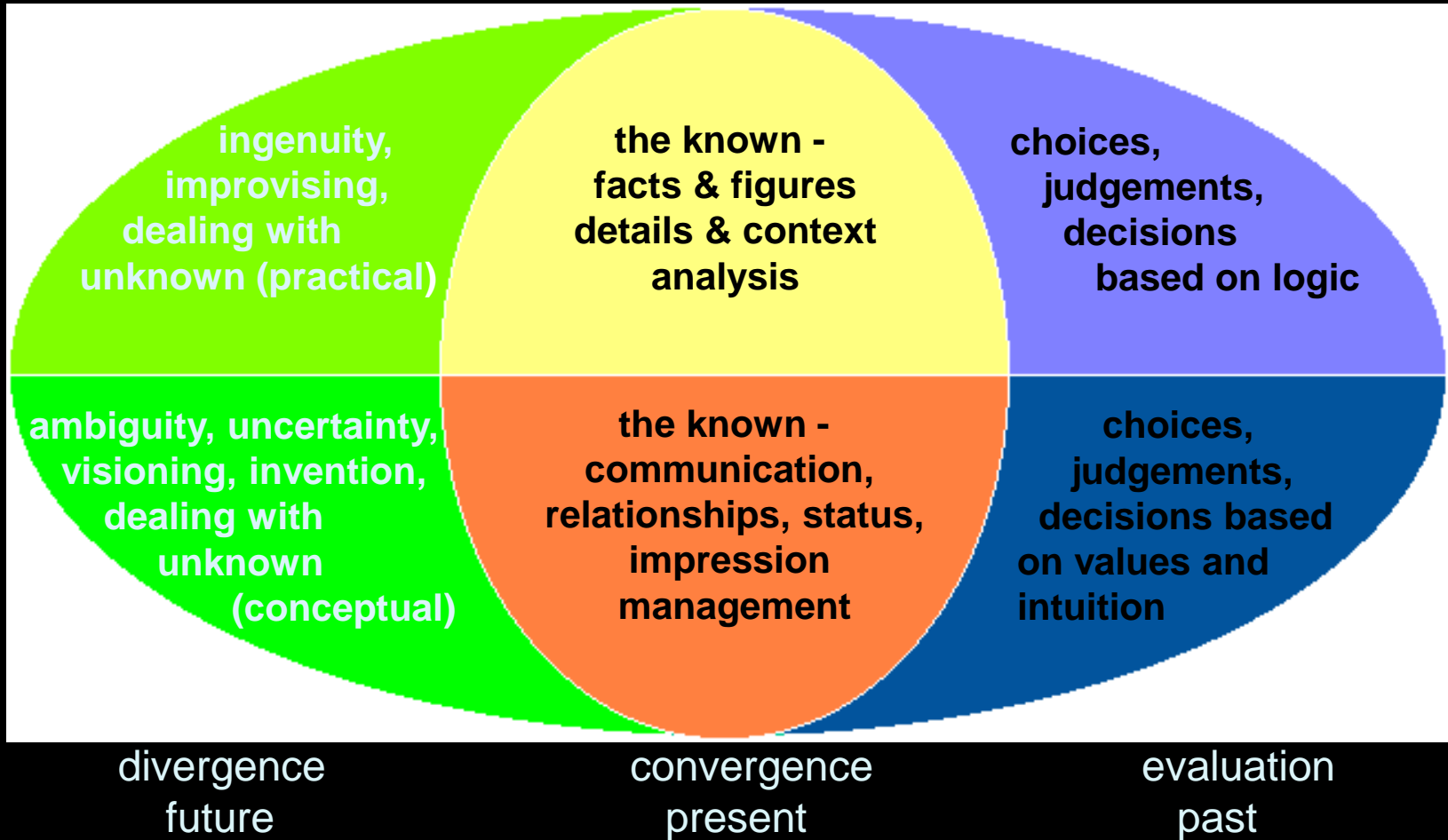
- Identification of the multi-dimensional *problem space*
- The critical clusters and their *co-evolutionary dynamics*
- Co-creation of an *enabling environment*, which is sustainable
- Introduction of a new way of thinking & seeing the world

Additional Tools & Methods

- Agent Based Models & simulations
- Psychology profiles to identify the preference profiles of individuals and groups
 - Landscape of the Mind (LoM)
 - *Kate Hopkinson*
- Visual Representation of the problem space
 - *Julian Burton*

Landscape of the Mind (Kate Hopkinson)

The universe of all “inner skill”
(competencies)



Landscape of the Mind (LoM)

(Kate Hopkinson, Inner Skills, UK)

- Email questionnaire
- Shows diagrammatically individual and group profiles of preferences
- Preferences can act as potential enablers or inhibitors in effective decision-making, strategic thinking, knowledge generation, etc.
- e.g. RRM & GSK



Two practical examples

- 5-day workshop with problem owners
 - Government Agency in Indonesia
 - Mitleton-Kelly, E. *'Effective policy making: addressing apparently intractable problems'* Ch. 8 in Handbook on Complexity and Public Policy, Ed. by Robert Geyer and Paul Cairney, Edward Elgar, May 2015
- Global exercise based on interviews
 - UNEP Report on *'Gender & Decision Making Focusing on Ocean and Coastal Management Policy'* , 31 January 2015
 - www.lse.ac.uk/complexity

Indonesia example

- Worked with Government Agency responsible for spatial planning and forests, which is facing a major challenge in terms of deforestation
- Indonesia has the 3rd largest forest in the world and retaining that forest, is therefore very important to climate change
- The approach taken was to help the GA change its own organization first, to enable it to address the problem of deforestation
- During the preliminary work, it became clear that the issues being faced internally, such as corruption, nepotism and ethnic groupings were very similar to those faced in the broader environment
- By addressing those issues internally the Government Agency would be better able to address them externally

Process

- Visit by team of 15 to London, December 2012
 - introduced to ten principles of Complexity Theory (Mitleton-Kelly 2003)
 - which help policy makers to understand organisations as complex social systems
- Set the ground for understanding the need for a change in policy, management style, culture and organizational structure
- During the workshop in Jakarta in March 2013
 - larger group of 30 introduced to the ten principles
 - exercise to identify the multiple dimensions of the problem space

Preparation for Jakarta Workshop

- Set of interviews conducted by one of the local facilitators, who also acted as the translators
- Data analysed into common themes, dilemmas or tensions and underlying assumptions
- The interviews and the analysis provided an outline of the problem space, which was used as a working framework for the workshop
- The fundamental difference between the interview analysis and the workshop:
 - the interview analysis is undertaken by a researcher or consultant outside the organization
 - work done during the workshop, is a direct outcome by the problem owners

Common Themes

- **The crucial importance of a strong leader**
 - 1990s seen as a 'golden era' for the organization
 - new Head in 2001 tended to over-promote individuals on the basis of ethnic affiliation
 - this legacy continues to plague the Agency, even after the current Head took over the organization in 2007
- **Nepotism and collusion** in the appointment of staff to key positions
 - leading to factionalism and loss of trust across the organization
 - The interviews suggested two possible reasons:
 - The desire for both money (cash for positions) and control in a context where, traditionally, individuals often compete for influence as "big men", in this case by acquiring the power to farm out positions in the bureaucracy
 - Lack of clear criteria or SOPs (Standard Operating Procedures) to guide recruitment by the Staffing division, leaving the system open to abuse
- **Confusing and uneven allocation of roles and responsibilities**
 - Traced to a Ministry of Home Affairs Decree aimed at rationalizing local government
 - With the possibility that this might result in redundancies, the Provincial Governor established new structures inside and outside the Government Agency (GA), to shield his bureaucratic cadre from cuts
 - These, however, also served to duplicate the work of the GA's existing divisions

Common Themes

- **Loss of respect and status** as the pre-eminent development planning agency at Provincial level
 - This meant that line agencies and District agencies no longer felt the need to report to or seek the GA's advice
- **A culture of 'survival' leading to a focus on individual rather than organizational resilience**
 - The organizational system did not provide any formal support or induction procedures for new recruits.
 - As a consequence, staff developed their own survival mechanisms
 - e.g. by establishing oneself as a good technician that can be relied upon to do the job;
 - allying oneself with a "big man" within the organisation;
 - mobilizing one's own charismatic power to command the personal respect of others;
 - or simply deciding to go with the flow

Jakarta Workshop

- Group of 30, cross-section across the organisational hierarchy
- Small groups discussing their perception of the problem/challenge facing them
- The team then went around the room, as individuals, without further discussion, writing on flip charts
 - flip charts around the walls with headings of the different dimensions: social, cultural, physical, political, financial, technical, etc.
- This is a counter-intuitive exercise in a complexity workshop as the participants are being asked to separate a complex problem into individual categories
 - the participants experience a great tension in isolating and categorizing the complex problem into simple categories
 - intentional and designed to help participants experience that difficulty
- Facilitators ask participants to find connections between the different dimensions
 - this process becomes very active and dynamic and needs to be 'orchestrated' appropriately
 - the idea is to identify the key clusters of connected dimensions across issues
 - to identify *interaction*, *connectivity* and *inter-dependence* between the dimensions, to understand some of the *co-evolutionary* dynamics, which underlie the problem space

Very sensitive issues surfaced

- By the end of Friday, there was a great deal of tension and discomfort in the room
- Issues were articulated and listed in full view, which were never talked about
 - e.g. ‘gangs’, corruption and nepotism
- The discussion was not easy and one had to understand the local culture to avoid offending the participants
- The term ‘transparency’ was found acceptable and captured the related issues of corruption, nepotism and ethnic groupings
- It also provided a way to agree on practical actions the following week when the team was focusing on the enabling environment

- The tension was tangible and that evening the two translators, were inundated with telephone calls from different groups, who felt very uncomfortable with the process
- To defuse the tension, we gave up our Sunday break to meet with the different groups individually
 - these meetings
 - the fact of being listened to
 - the break between Friday and Monday
 - the thought that on Monday we were going to be much more positive and develop the conditions for an enabling environment
 - all helped to change the atmosphere significantly

The Social Aspect

- Played a very important role
- We were in a hotel in the middle of nowhere, 2.5 hours' drive from Jakarta and were constantly in each other's company
 - we had all our meals together
 - had to talk to each other and get to know one another
 - this informal social interaction helped enormously with the overall process

WARNING

- Researchers wishing to use this approach must be experienced enough to handle the conflict and tension, which will inevitably arise from the process
- If these tensions are not addressed appropriately and effectively, a great deal of damage could be done to the organisation, as deep seated issues have been surfaced which need resolution

Identifying the Conditions for the EE

- By Monday morning everyone was highly enthusiastic and ready to start on the positive part of the process
- Spent two days on the Enabling Environment, with a great deal of discussion in small groups and in plenary and some very important agreements were made
- The findings from the interviews and from the workshop were brought together to identify the *key clusters of issues* that had to be addressed
- They identified *inter-connectivity, inter-dependence and potential co-evolution*

Next step

- Is to ask the question '*why*'?
 - It is easy to answer by explaining '*what*' happened and '*how*' it happened, but extremely difficult to think through '*why*' did it happen and what would have stopped it happening?
 - If the '*why*' question is not answered satisfactorily, then the deep underlying causalities will not be surfaced and understood and the process will remain at a superficial level and the conditions being set up for the enabling environment will be inadequate or even incorrect

Key Theme Clusters

A. Leadership

- not everything depended on the leader
- idea of *distributed leadership* was introduced and constantly reinforced during the workshop
- was captured by the following quotation: *“the ability to change and improve the GA lies in the hands of each of us, and does NOT depend on a single leader”*

B. Building a sense of ownership and responsibility towards the GA as an organisation

- *B1. Increase understanding of the GA’s roles & functions*
- *B2. Develop personal integrity as the basis for organisational integrity*

- *B3. Increase transparency in 3 key areas:*
 - (a) increased *budget* transparency
 - (b) transparency over *recruitment* decisions, to overcome the fear of nepotism
 - (c) transparency over *procurement* decisions
- *B4. Multi-disciplinary pilot activities that bridge different Divisions*
 - agreed to hold a Discussion Forum to share knowledge about Sustainable Development, and to discuss problems related to Monitoring and Evaluation, and other related topics
- The main insight was the need to establish a learning environment to learn and support each other's activities that fitted into 'C' below

C. Develop a learning environment to facilitate co-evolution

- *C1. Increase capacity to communicate*
- *C2. Develop a culture of induction and mentoring*
- *C3. The planning process should make appropriate use of staff*
- *C4. Improve technical & management skills*

Applying the principles of complexity

- Develop *connectivity and feedback*
 - to build a sense of ownership and a learning environment
- Enable *self-organization*
 - the reliance on authority and on the organization's leader, as the source of all meaningful actions and initiatives, was going to be difficult to overcome, yet there were signs that this was happening.
- Facilitate *distributed leadership* at all levels, not just formal leadership
- Expect the *emergent* and the unexpected and treat it as an opportunity to innovate
- Use it to *explore the space of possibilities*
- Develop *multiple micro strategies*

- *Facilitate and accelerate **co-evolution***
 - the setting up of a learning environment to improve communication and learning from each other, would be fundamental in accelerating change through an active co-evolutionary process
- The GA has been pushed *far-from-equilibrium* by acquiring a new Head and a new Governor
 - both these men are imposing new strategies that mean the GA cannot continue to operate as it did in the past and has to change
- *Create new order*, i.e. develop a new GA
 - the ability of a complex system to create new order
 - e.g. a new structure, new relationships, or a new way of working
 - is one of the key distinguishing characteristics of complex systems (Prigogine & Stengers, 1985; Nicolis & Prigogine, 1989)

Contribution of Complexity

- It has provided the GA with an explanatory framework to help it understand itself as a complex social system with particular characteristics
- By using the logic of complexity they will be able to work in a different way to overcome past weaknesses and develop new strengths to enable them to cope within an increasingly difficult and hostile environment

Some Key Insights Gained by the GA

- During the problem identification process, the workshop surfaced some very sensitive issues, which were not normally discussed
 - such as 'gangs', corruption and nepotism
 - articulating these issues and discussing them in plenary with a team, which crossed hierarchical boundaries, was a big step forward for the GA

Other insights:

- That the organisation was *inter-dependent* and that the ability to change and improve was in their hands and not entirely dependent on a single leader
- The concept of *co-evolution*
 - that no individual or team is powerless
 - that they do not exist in isolation
 - they are part of a bigger social eco-system that is constantly changing and co-evolving internally as well as with its broader external environment

- that the behaviour of human complex systems cannot be *predicted or controlled*
 - although it can be enabled and facilitated through an enabling environment
- that it is *emergent*
 - & more than the sum of its parts
- that *self-organisation* and *exploration of the space of possibilities*, can be applied to some of the initiatives they are trying to encourage with local communities

- It was the combination of:
 - an understanding of complexity principles in practice
 - the workshop process of identifying the problem space and the enabling environment
 - which provided the deep insights

- The theory alone would not have been enough
 - and the workshop process without the theoretical underpinning, would also not have worked as well
 - the theory explained the process and underpinned the new insights

Conclusion

- The key theme clusters and related actions, agreed during the exercise
 - provide an indication of the practical application of the methodology, and
 - an understanding of how the enabling environment begins to take shape
- However, this is just a first step that needs further discussion and refinement
- It also needs to be applied at *multiple scales*
 - this exercise took place later, through Skype workshops

A Different Context & Future Developments

- The methodology has been used with groups of experts to look at pandemics
- The findings have provided the research topic & the partners, to prepare a research project proposal
- To be submitted to RCUK's *Partnership for Conflict, Crime and Security Research Programme*

Background

- World Economic Forum Global Agenda Councils on:
 - Catastrophic Risks (now Risk & Resilience)
 - Complex Systems
- Been working together since November 2012 to explore the difference a complexity theory perspective might make to addressing catastrophic risks & specifically pandemics
- 5 London Workshops
 - 3rd July 2013 @ Zurich Insurance, London
 - 11th November 2013 @ KCL, London
 - 29th April 2014 @ Deutsche Bank, London
 - 17th July 2014 @ KCL, London
 - 8th Dec 2014 @ KCL, London: pandemics & conflict

Some key findings: 5 Phases

1. Preparedness
2. Incidence and spread (e.g. of disease)
 - 1 & 2 incl. *emergence, self-organisation, co-evolution, exploration of the space of possibilities*
3. Impact on critical national/international infrastructure & response
 - Push the infrastructure *far from equilibrium*
4. International response capacity & humanitarian access to affected zones
5. Recovery
 - 4 & 5 contribute to the *creation of new order*

The Proposal & a Future Vision

- A research project to be submitted to RCUK's *Partnership for Conflict, Crime and Security Research Programme*
- To use the inter-relationship between pandemics & conflict as a case example
- To develop the methodology and the modelling as ***generic tools*** to study catastrophic risks
- The longer term vision (10 year?) is to engage researchers around the world to test the methodology and modelling locally

The Aim of the Proposal is:

- To make an original contribution towards conceptualising
 - strategies
 - methodologies
 - and modelling
- Needed to anticipate and minimize major global risks
- And to enhance emergency preparedness to alleviate their consequences

To achieve that aim, the research project will:

- Refine the EMK Complexity Methodology
- Develop the computer modelling and simulations developed in the USA and the UK
- Use pandemics and conflict as an inter-related case example
 - to explore the co-evolutionary dynamics for each phase and between all the phases
- Explore the impact of such crises on the national and international critical infrastructure(s)

The main objectives will be to:

- Develop a **generic methodology and modelling** that could be used to examine other global risks
- To support the **international humanitarian system**
- Conceptualise appropriate strategies informed by complexity science

Some Research Partners

- For the pandemics study, the modelling research partners will be:
 - **Prof. Alessandro Vespignani**, Sternberg Distinguished University Professor, Department of Physics, College of Computer and Information Sciences, Bouve' College of Health Sciences, Northeastern University Boston, USA. Prof. Vespignani is considered a world expert on the modelling of pandemics.
 - **Dr. Babak Pourbohloul**, Director of the WHO Collaborating Centre for Complexity Science for Health Systems (CS4HS). He is also the Director of Division of Mathematical Modeling at the British Columbia Centre for Disease Control, and an Associate Professor at the Faculty of Medicine, University of British Columbia, Vancouver, Canada.
- With the support of WEF (World Economics Forum) and possible involvement of UN OCHA (Office for the Coordination of Humanitarian Affairs)
- Currently looking for domain experts on conflict

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- **Mitleton-Kelly E. (2005)** *'Co-Evolutionary Integration: The Co-creation of a New Organisational Form Following a Merger or Acquisition'* in *Emergence: Complexity & Organization Vol 8 Issue 2, (E:CO 8.2)*; also in *'Complexity as a Sensemaking Framework'*, pp39-62, Ed. Aaltonen M., Barth T, Casti JL, Mitleton-Kelly E., Sanders TI, Finland Futures Research Centre Publications 4/2005, <http://www.tukkk.fi/tutu>
- **Mitleton-Kelly E. (2011)** *'Identifying the Multi-Dimensional Problem-space & Co-creating an Enabling Environment'* in *E:CO (Emergence Complexity & Organisation)* in 2011 & as Chapter 2 in *'Moving Forward with Complexity'*, 2011, Ed. Andrew Tait & Kurt A. Richardson, 2011, ISBN 9780984216598, Emergent Publications

Books & Report

- *'A New Synthesis of Public Administration: Serving in the 21st Century'*, by Jocelyne Bourgon, P.C., O.C., McGill Queen's University Press
<http://mqup.mcgill.ca/>
 - outlining a framework of governance for government based on complexity theory
- *'Corporate Governance and Complexity Theory'*, by Marc Goergen, Christine Mallin, Eve Mitleton-Kelly, Ahmed Al-Hawamdeh, Iris Hse-Yu Chiu, Oct 2010, Edward Elgar
- Report on *'Gender & Decision Making Focusing on Ocean and Coastal Management Policy'* for UNEP, Jan. 2015
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Thank you

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