Systems thinking and complexity science for policing (2017)

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Lead partner: Merseyside Police
Other partners: Greater Manchester Police & European Erasmus project on education for data analytics

Executive Summary

This project made an innovative synthesis between traditional Systems Thinking (Fortune) and Complex System Science (Johnson). This is published in various articles.

Working with Merseyside Police on their Organised Crime Group Mapping (OCGM) data, a workshop took place that suggested improved ways of organising and managing this important police information and intelligence system at local and national levels. An ongoing aspect of this work is to develop new methods of data analytics for these data.

Also working with Superintendent Phil Davies from Greater Manchester Police as a PhD student, his research looks at the planned organisation of GMP to investigate the potential effectiveness of the policy.

The methodology of Systems and Complexity Thinking is established in the system complexity MOOC. This is demonstrated by the systems thinking workshop and analysis of the OCGM system. Methods of data analytics are also used to analyse policing and organised crime as complex systems.

Key findings

- Systems thinking can identify ways to improving the OCGM system and its implementation.
- Data analytics and visual analytics can contribute to automatically extracting information from the OCGM data
- Systems thinking can identify ways to contribute to improving the OCGM system and its implementation.
- New method of data analytics and visualisation can make the OCGM system more usable and useful.
- Agent based models can be useful to investigate policy outcomes in policing.
- Beyond policing, OCGM data applies to all police forces and Agent based modelling can apply to a lot of policing activity.

Outputs

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Systems thinking provides theory and practical tools for seeking solutions to messy social and organisational problems at local, regional and global levels.

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What is a system? A system is formed from a set of interacting parts, every part affects, and is affected by, every other part Systems have subsystems. Sometimes systems go wrong. So how can we get the best out of a system, and how can we prevent systems from failing? Systems thinking looks at the interactions and not just the parts. It sees the whole. This insight alone can help you understand problems, and can help you avoid systems failure. But some systems are inherently complex. These complex systems require specialised methods and computer tools to understand, design and manage them. This course will introduce you to systems thinking, and show how it can be used to address problems in our increasingly complex world.

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What will you achieve?

By the end of the course, you'll be able to...

- Apply systems thinking to a wide variety of social and technical systems
- Apply the method of drawing systems diagrams to represent systems and their dynamics
- Apply the Formal Systems Model to practical situations
- Apply knowledge of feedback loops and their likely impact on system behaviours
- Apply the concepts of Complex Systems System to understand why systems are unpredicatble
- Collaborate with others analysing and improving systems

Who is the course for?

This course is suitable for:

- managers in the private and public sectors responsible for commercial and policy problem-solving in their organisation;
- scientists wanting to take their research into practical applications;
- officers of organisations such as UNESCO, the European Commission, and ministries in national governments;
- young people wanting to engage in problem solving;
- citizens wanting to formulate arguments for or against top-down policies;
- or members of the general public motivated by curiosity or wanting to understand better the world we live in.

What do people say about this course?

> This course fits in rather well with some other courses I have taken over the past couple of years so I will definitely go on to the sister course, Global Systems Science, to continue the scaffolding of knowledge. This is a lovely intellectual odyssey to begin 2017. A big 'thank you' to the team for putting the course together.

Jim Chen

Who will you learn with?

[Jeffrey Johnson](#)

I am Professor of Complexity Science and Design at the Open University & Deputy President of the UNESCO UniTwin Complex Systems Digital Campus. I am interested in interdisciplinary science for policy.