



The OR Society Annual Conference **OR61**

3 – 5 September 2019
Sibson Building, Kent University



Making an Impact

EVERYBODY WANTS TO MAKE AN IMPACT

University of
Kent

WELCOME AND INTRODUCTION

This year's *making an Impact* at OR61 is designed to support everyone – analytics professionals, academics and practitioners – in *making an Impact*. Whether it's by learning new tools and techniques, participating in system workshops, getting a better understanding of the practicalities of Data Science or finding new opportunities for collaboration, OR61's *Making an Impact* is your key to being more effective and successful in OR.

We have two themes for the price of one in this year's *Making an Impact* – **Systems Thinking** and **Data Science**:

Systems Thinking: For the Systems Thinking theme we are building on the success of the Systems stream at OR60 in Lancaster by having a series of joint workshops and tutorials, allowing you to find out how you can use Systems approaches to make an impact in your work.

Data Science: For the Data Science theme we have a whole day of Data Science activities, with a series of sessions intended to take you all of the way through a project – from understanding the business problem through finding and analysing data through to how to present Data Science results in a way that makes an impact with decision makers.

This year we aim to give more people than ever the chance to make an impact, with joint sessions with the Systems stream and activities **over all three days** of the conference, though we will still have a full day of activities on the **Wednesday 4 September** for those who might only be attending a single day of the conference and want to maximise their ability to make an impact.

Workshops, seminars and tutorials: We are planning a full programme of workshops to help you make an impact using new tools and techniques or through exploring aspects of OR practice. This year the workshops have a strong systems theme, with workshops scheduled on Systems Thinking, Resource Mapping and applying Systems Engineering principles in healthcare improvement. We also have a very intriguing sounding workshop on Attending, Responding and Becoming which promises us an 'inclusional playspace' for systems enquiry.

In addition, we have other systems-related workshops including your opportunity to solve complex, inter-related and worldwide problems using the Common Good Game, developed for the Shell Futures team. There will also be a Synergistic Systems workshop looking at developing a conceptual landscape of systems approaches and linking it to ways of thinking about the future, inter-relationships and problem solving.

There will also be workshops looking at OR and Education, with a review of progress towards a L7 OR Apprenticeship as well as a workshop to explore the new L7 Systems Thinking Apprenticeship Standard. There are also applications workshops from market leading tool providers such as SIMUL8 and modeFrontier. Finally, we are planning a creativity workshop to help you break down the barriers to finding solutions to those difficult problems.

Problem Solving: There will also be the opportunity to solve Kent's problems in another of Miles Weaver's popular series of Grand Challenges. Depending on progress on our European negotiations this may be a very timely intervention!

Data Science: This will be a day-long set of data science activities taking you through the whole process of a data science project, from understanding the business requirement through obtaining and cleansing data through to analysis of results. If you're looking to gain an understanding of data science and what's involved in the process of a data science project, this stream of *Making an Impact* will provide you with an overview of such a project. From framing the question through basic data analysis through to building predictive models and communicating your results, this stream will cover it. The activities will be hands on, using a dataset for analyses using the R environment. The stream will end with a round table where you will have the opportunity to quiz the team on what makes a successful data science intervention and where data science might be going next.

Conclusion: As you can see we have a packed programme for you. The committee look forward to seeing you all at our wide range of *Making an Impact* workshops at OR61.

Don't forget – use the hashtags #OR61 and #MakingAnImpact

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For more information go to www.theorsociety.com/OR61 and choose the *Making an Impact* page. As '*Making an Impact*' is participative, some programme details may vary during the conference, so please keep an eye out for news.

Got any questions? Please email us at john@larrainzar.co.uk or hilary.wilkes@theorsociety.com or, if you are at the conference, drop by the *Making an Impact* desk in Sibson Building, Atrium.

MAI at OR61 – Organising Committee:

The *Making an Impact* events taking place on Wednesday 4 September are only possible thanks to the hard work of the MAI team below with significant assistance from Hilary Wilkes at The OR Society and so 'thank you' to you all from The OR Society.

Chair	John Medhurst <i>Larrainzar Consulting Solutions</i> Email: john@larrainzar.co.uk
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	Paul Thomas <i>Strive Insight</i> Email: paul.thomas@striveinsight.com
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Making an Impact at OR61:

Workshops, Seminars and Tutorials:

- Tasters and master classes to help make an impact by using new tools or techniques
- Workshops and discussions to help you Make and Impact through contributing to OR Society initiatives, reflecting on OR practice, developing new skills or business areas
- Sessions on specific tools to give you new capabilities to make an impact

Data Science Workshops: a day-long set of data science activities taking you through the whole process of a data science project, from understanding the business requirement through obtaining and cleansing data through to analysis of results.

Data Science Roundtable: An opportunity to quiz the experts on what makes a successful data science intervention.

Systems Thinking Workshops: An extensive selection of Systems-Thinking themed workshops to help you benefit from systems approaches in your work and research.

Level 7 Apprenticeships: A chance to attend workshops looking at both the developing OR L7 apprenticeship and the System Thinking Practitioner L7 apprenticeship.

Speed Networking: a fun and focused session to help you make new contacts across the OR spectrum.

Tuesday 3 September

TECHNIQUES STREAM

ENGINEERING BETTER CARE: A SYSTEMS APPROACH TO HEALTHCARE IMPROVEMENT

11:00-12:30, Sibson, SR2

OR61A237

Alexander Komashie, University of Cambridge

Tom Bashford, University of Cambridge

Engineering Better Care (EBC) is the landmark report published in 2017 by the Royal Academy of Engineering (RAEng) in collaboration with the Royal College of Physicians (RCP) and the Academy of Medical Sciences (AMS). This report defines an engineering-informed 'systems approach' to health and care improvement, in response to a growing body of literature calling for systems thinking to be used to improve health services.

The EBC systems approach was developed over 18 months through a series of workshops with a range of experts including clinicians, systems engineers, improvement specialists, policy makers and patients. The strength of the work is the clarity with which it defines a systems approach, effectively translating the V-diagram of the International Council on Systems Engineering (INCOSE) into an accessible framework based on a set of questions to be addressed during improvement. This framework is designed to be as relevant to local quality improvement projects as to high-level service redesign initiatives, and to be complementary to all existing approaches to healthcare improvement such as the IHI model for improvement, Lean, and Six Sigma.

Since the launch of the EBC report, the Engineering Design Centre (EDC) at the University of Cambridge has been developing a toolkit to support the effective use of the systems approach, to help healthcare practitioners and improvement specialists put this into practice. This work has been informed through consultation and operational experience, involving improvement experts from clinical medicine and engineering domains.

This workshop will introduce the EBC systems approach, focusing on its four key perspectives and a series of iterative questions which may be used to explore these. It will also briefly present the working version of the toolkit. Participants will have the opportunity to explore the approach and the toolkit through hands-on activities, and provide feedback that will inform its ongoing development.

JOINT WORKSHOP WITH THE SYSTEMS THINKING STREAM

DEEPER SYSTEMS, WIDER PRACTICES: A PATH-FINDING WORKSHOP TO EXPLORE THE APPLICATION OF SYSTEMS TOOLS TO GRAND SOCIETAL CHALLENGES

From 11:00 and 13:30, Sibson Building, SR6

OR61A354

OR61A355

Joe Ravetz, University of Manchester

Aims: This workshop will attempt a systematic review, evaluation and comparison of different systems methods and tools, in application to a small range of problems or challenges. All Systems Thinking practitioners are encouraged to attend.

Methodology: this is based on recent experience with the Synergistic '4-S' method with 'visual co-creation'. The Synergistic method combines various approaches, including SSM, ANT, PSM, CLA, ALS etc., with a focus on the co-creation of 'collective systemic intelligence'.

Beforehand: participants will be asked to prepare a ½ page summary outline: a problem or challenge they are working on, and a systems-type method or tool which they are using. This summary could include text, concept diagrams, and visuals if available.

At the start, participants cluster in tables, and select a case study problem or challenge for joint exploration (this can be changed if needed). Each participant has a role to play, either as an 'actor' in the problem, or as 'vector' testing methods & tools in the 'meta-system'. The workshop will use a 4-stage process:

- **Systems** – review of scope and objectives: interactive visual mapping of meta-systems, i.e. 'actors, factors, sectors, vectors', to explore deeper underlying systemic layers which are not apparent from the components.
- **Scenarios** – explore dynamics of change & alternative futures for the problem/challenge/meta system.
- **Synergies** – explore potential inter-connections, synergies & opportunities for analysis/synthesis/co-creation, with a range of possible methods & tools applied to the problem.
- **Strategies** – explore possible implications and next steps, in terms of the problem/challenge, and the meta-system of methods/tools.

Result: the review will be in flipchart/ppt format, to be consolidated by the facilitator & shared online.

PRACTICE STREAM

WOMEN IN OR

16:45-18:15, Sibson Building, LT2

OR61A122

Frances O'Brien – Warwick Business School

Niki Jobson, Ministry of Defence

Annunziata Esposito-Amideo, Kent Business School

At OR60, we heard from a group of students who had undertaken their MSc projects conducting research on the theme of Women in OR. One of their key recommendations was that The OR Society establish a network for Women in OR. Planning for the network is now well underway, with a launch event in the autumn 2019 – watch this space. In the meantime, we are continuing to encourage interest in this area with an event planned for OR61. The Women in OR event will take place toward the end of the first day of the conference and will consist of two components. Firstly we will run an interactive, round table, activity which will give participants the opportunity to share their stories of their careers and lives. Secondly, we have a Pimm's reception, kindly sponsored so far by SIMUL8 (whose CEO and CTO are women) and Bays Consulting (an all women consulting company!). Whilst the event is targeted at Women in OR, we welcome everyone to join us and support the ORS Women in OR network!

Wednesday 4 September

PLENARY SESSIONS

INTRODUCTION TO MAKING AN IMPACT

08:30-09:00, Sibson Building, LT3

John Medhurst, Larrainzar Consulting Solutions Ltd

The Wednesday will start with a Welcome session for the conference in general and an introduction to the Wednesday *Making an Impact* sessions.

SPEED NETWORKING

09:00-10:30, Chipperfield Building, SR5

Luke Huxtable, Defence Science and Technology Laboratory

During OR61 we will host a speed networking session that will give you the opportunity to interact with a wide range of professionals from across the OR Spectrum. Speed networking is designed to accelerate meetings with professional contacts. It will involve participants gathering to meet each other in a series of brief exchanges. During an interaction, participants share their professional backgrounds and try to identify common interests. The session will be a fun and interactive way to meet people from a diverse range of backgrounds and roles to share experiences and build your networks.

PRESIDENT'S MEDAL PRESENTATIONS

13:30-15:00, Sibson Building, LT3

The President's Medal is awarded for the best practical application of OR submitted to the competition (a wide definition of OR is used). Entries are welcomed from both industry based OR workers and consultants as well as from academics.

This period immediately after lunch, will include the three presentations for the President's Medal and the accompanying opportunity to vote on your favourite.

WORKSHOPS

PRACTICE STREAM

THE OR SPECIALIST LEVEL 7 APPRENTICESHIP AND THE OR IN EDUCATION NATIONAL PROGRAMME

09:00-10:30, Sibson Building, SR1

with a repeat performance at

15:30-17:00, Sibson Building SR1

OR61A209

Alistair Clark, Chair of The OR Society Education Committee

Alec Waterhouse, BEIS

Evelyn Hardy, OR Society

This session will:

1. Very briefly introduce participants to The OR Society's Education Committee (EC), where it sits within The OR Society, and what it does.
2. More substantially, brief practitioner/employer participants on our Level 7 Apprenticeship initiative, which is now up and running with a Trailblazer group chaired by Alec Waterhouse of BEIS/GORS, and encourage employers to take advantage of it, once it is approved by the Institute for Apprenticeships, to educate and qualify their graduate OR employees at MSc level (which is at Level 7).
3. Also substantially, tell participants about the newly rebranded "OR in Education" outreach programme (Renamed and expanded from "OR in Schools" so as to include universities). We will cover the reasons behind the name change, what the "OR in Education programme" has achieved so far, our goals for the future, how you can get involved and why we'd love for you to work with us.
4. Open discussion on the above with Q&As.

ARTIFICIAL INTELLIGENCE AND OR

11:00-12:30, Sibson Building, SR1

OR61A315

Michael Mortenson, University of Warwick

This *Making an Impact* session will present the findings of The OR Society's Task and Finish Group on Artificial Intelligence (AI). The will incorporate perspectives on a range of issues, including the growth of AI, its applicability to organisational use-cases, the ethical and societal implications, and the overlaps that AI has with operational research (OR). To the latter, the session focuses on how AI and OR interact, the opportunities that this growing interest may present to the OR community, and the role the community can play in enabling and maximising the impact of AI. Additionally, the session will provide a forum and discussion allowing delegates to share their experiences of working with AI methods, to learn more about the field, and to help shape The OR Society's future strategic directions.

PROBLEM SOLVING STREAM

GRAND CHALLENGES OF KENT

11:00-12:30, Sibson Building, SR6

OR61A352

Miles Weaver, Edinburgh Napier University Business School

Simon Barnes, Kent Business School

When launched in 2017 the future UK Industrial Strategy focused on one shortcoming and four Grand Challenges for the UK as the first industrialised nation. The shortcoming we need address is productivity, in the widest sense, increasing this from the aspect of ideas, people, places, infrastructure and the business environment.

Of the four future Grand Challenges (Future of Mobility, Clean Growth, Healthy Ageing, AI/data) for OR61 we have decided to look at two specifically:

- Future of Mobility
- Healthy Aging

From the perspective of the **Future of Mobility** we want to understand how we can use road space for trucks more effectively in Kent. Up to 5,500 trucks per day travel each way through Kent and from France. One small delay at the port or tunnel quickly results in long queues and delays. We will hear from those responsible for managing the impact of this congestion. We would like to learn from you how a more proactive, systems approach to our challenge might help.

In the case of **Healthy Ageing** we do not believe we handle the process of ageing in the best way for the individual or the economy. Research has shown us that maintaining social networks and keeping active helps with healthy ageing. So would a more graduated and flexible approach to care, tailored to the individual. We would like to understand how a personal plan that is effective, is of value to the economy can help us lead fulfilled lives.

To support these questions we have three special guests:

- Toby Howe, Senior Highway Manager, Kent County Council
- Emily Weaver, Kent Resilience Forum, Brexit Project Officer, Resilience & Emergency Planning, Kent County Council
- Georgina Lee – the Age of No Retirement - <https://www.ageofnoreirement.org/about>

We'll help our guests to structure, analyse and respond to the challenge(s) posed. The feasibility of each action will be considered as a potential Pro Bono project, research funding bids, consultancy projects and/or student projects.

DATA SCIENCE STREAM

This year as part of *Making an Impact* we will be devoting a whole day of activities to exploring a Data Science project from beginning to end, highlighting the similarities to the OR process. This series of workshops is intended for those who have a background in OR and want to understand more about Data Science and how to make use of it to make an impact in their work or research.

FRAMING THE PROBLEM

09:00-10:30, Sibson Building, PC1

OR61A247

Davin Parrott, West Midlands Police
Rob Smithies, Atkins Global
Paul Thomas, Strive Insight
Stephen Welch, Model Citizens

Data science is currently gaining great currency and momentum in a variety of areas in the public and private sectors. Machine learning, AI, predictive analytics and big data all fall within the remit of data science. This stream, over the course of four workshops aims to provide an introduction to data science – what is it, how is it different from other forms of analytics undertaken in organisations, how is it undertaken, how can the results from projects be communicated and what are its implications?

This first workshop will explore what data science is and how it can be useful in a variety of different settings and how to practically approach a data science project and frame the research question.

EXPLORING DATA

11:00-12:30, Sibson Building, PC1

OR61A335

Davin Parrott, West Midlands Police
Rob Smithies, Atkins Global
Paul Thomas, Strive Insight
Stephen Welch, Model Citizens

Continuing from the first workshop, which outlines what data science is and how it can be approached, this second workshop will introduce you to the practice of data science via the exploration of a dataset using the software R.

PREDICTIVE ANALYTICS

15:30-17:00, Sibson Building, PC1

OR61A336

Davin Parrott, West Midlands Police
Rob Smithies, Atkins Global
Paul Thomas, Strive Insight
Stephen Welch, Model Citizens

The third workshop in the data science series will continue the practical theme through using R to undertake more advanced analyses including approaches to building predictive (machine learning) models and how this can feed into the organisational decision making process. Finally, we will demonstrate how to ensure that you really land the results (and their message) in the business so that the output gets acted upon by senior decision makers to make an impact and drive change.

ROUNDTABLE DISCUSSION

17:00-18:30, Sibson Building, PC1

OR61A337

Davin Parrott, West Midlands Police
Rob Smithies, Atkins Global
Paul Thomas, Strive Insight
Stephen Welch, Model Citizens

The final workshop in the data science series will take the form of a roundtable discussion and Q&A around data science, its use and potential concerns around its use.

TOOLS STREAM

DATA MINING WITH MODE FRONTIER – QUICK AND EFFECTIVE TECHNIQUES TO DEEPEN YOUR UNDERSTANDING OF YOUR DATA

11:00-12:30, Sibson Building, MBA Area

OR61A321

Novella Saccenti, EnginSoft S.p.a

Data mining is a key solution in extracting knowledge from information: This is especially important in the current climate of 'Big Data' where companies are storing huge amounts of data. It is also the most effective way to discover patterns and relationships among a set of data, composed by a lot of different interconnected factors.

The workshop will focus on statistical techniques that engineers can use to analyse different data sets. For this workshop, Data will be processed using the optimization platform modeFRONTIER (<https://www.esteco.com/modelfrontier>), which is able to import, analyse and visualize data in a smart way.

During the workshop, attendees will be able to understand how:

- To easily import data from an external source: external sources can be experimental data, or data coming from a previous computation, such as an optimization process.
- To distinguish which are the real input and the output variables of the process.
- To clean data: if some data presents an omission it is necessary to decide how to fill the gap.
- To understand which are the most important variables, able to condition the results to improve development.
- To understand which are the best strategies to understand how to proceed with further computation and refinements.
- To be able to visualize data allowing information to be transferrable to the whole team.
- To be able to make decisions based on statistical analysis.

The understanding of these steps brings scientists deep inside the behaviour of data, making it possible to highlight the important components of a process and consequently make better-informed decisions.

BUILDING HYBRID SIMULATIONS WITH SIMUL8

15:30-17:00, Kennedy Building, PC3

OR61A361

Tom Stephenson, SIMUL8

For some models, utilizing the discrete elements of a simulation alone can be limiting. Hybrid simulations can incorporate the best of other techniques.

In this workshop we'll explore two uses cases and get you building some simulations yourself! Our first use case will look at how to use an agent feature of SIMUL8 called State Charts to add agent into your discrete event simulation. Participants will work on a healthcare scenario where the patient's disease progression impacts their flow through their care pathway. Our second use case will look at how to incorporate tanks and pipes to model liquids and other continuous processes in manufacturing, as well as discrete we'll also show some agent being used to model equipment failure rates, showing the ultimate hybrid – all three in one!"

TECHNIQUES STREAM

RESOURCE MAPPING – VISUALISING AND MANAGING VALUE CREATION

11:00-12:30, Sibson Building, SR5

OR61A173

Martin Kunc, University of Southampton

Federico Barnabe, University of Siena, Italy

The workshop combines the Dynamic Resource-Based View (DRBV) of the firm on the basis of the idea that strategic resources are interconnected and have to be managed with the collaboration of all stakeholders in order to inform governance actions and create value with a holistic perspective. We use "resource mapping", which is a DRBV-based visual and analytical technique representing the causal relationships between resources and governance actions, and a recent tool for corporate reporting, the Integrated Reporting.

The workshop will have two parts. Firstly, a short introduction to DRBV to explain the logic of the framework and the methodology. Secondly, an application of DRBV using a new form of corporate reporting called Integrated Reporting is demonstrated based on the report from a global energy company. Finally, discussions about its application in other areas and with other methods will be performed.

HOW TO BE CREATIVE

15:30-18:30, Sibson Building, SR5

OR61A196

Dennis Sherwood, *The Silver Bullet Machine Manufacturing Company*

So, you've done your OR analysis, and run some forecasts. The results don't look good. What next?

What next is all about creativity. If the future doesn't look good, something has to change to make it so: perhaps something needs to be designed differently, perhaps there needs to be a significant change in the context in which a system is operating, perhaps someone (or some people) needs to change his/her/their mind(s). None of which will happen by themselves; they can happen only if the corresponding idea is tabled first. And having good ideas requires creativity.

But how does creativity actually happen? What, fundamentally, is creativity anyway? Can you have great ideas 'on demand'? Do you have to be a 'design thinker'? Or can an 'ordinary' person like me be creative? These are important questions, and answering them is what this session is all about...

The workshop will be led by Dennis Sherwood, an expert in creativity, modelling and systems thinking. Dennis now runs his own business, having previously been a consulting partner with Deloitte Haskins + Sells, and Coopers & Lybrand; an executive director at Goldman Sachs; and MD of the UK consulting operations of Stanford Research Institute (SRI). He is also the author of numerous journal articles, and eleven books.

SYSTEMS THINKING STREAM

This year, in collaboration with the Systems Thinking stream *Making an Impact* offers a number of workshops exploring different aspects of systems thinking practice intended for both those with an existing interest in systems approaches or those with a desire to learn more about systems approaches in a fun and open environment.

USE OF SYSTEMS THINKING CONCEPTS AND METHODS IN OR

11:00-12:30, Sibson Building, SR2

OR61A327

Phil Jones, Dstl

Niki Jobson, Dstl

This workshop will introduce some simple systems concepts and practical tools that can be applied within an OR intervention. The workshop will be interactive and include some instructive, and fun, practical activities.

Topics covered will include:

- What is a system? What types of system are there?
- A practical demonstration of the importance of feedback
- Considering system boundaries
- The use of systems context diagrams to promote problem exploration and scoping an OR intervention
- A tool for encouraging different levels of thinking

Tools for problem reframing and thinking from different perspectives.

ATTENDING, RESPONDING, BECOMING – LIVING LEARNING ENQUIRY IN A NATURALLY INCLUSIONAL PLAYSPACE

15:30-18:30, Sibson Building, SR2

OR61A311

Louie Gardiner, University of Hull

What does it mean to be a systemic practitioner-researcher in a complex, interconnected world in which everything is connected to everything, directly or indirectly and our capacity to make things happen on demand is limited? What does this mean for us? About our roles?

And about what we do and how we engage other stakeholders who are implicated, impacted and need to be involved one way or another?

What does it mean to be a practitioner-researcher in service to our clients – when we cannot separate ourselves nor isolate the unintended impact we (may) have on and from the system?

This workshop introduces you to a suite of systems thinking frameworks that have emerged before and during my doctoral inquiry. We will start by setting the scene using the SAM – Symmathesic Agency Model. I hope to do this through a digital prototype that will give you a visual-kinaesthetic sense of the landscape we will be exploring.

I will then take you on a reflective journey to help you better understand how to situate, position and articulate your research using the Systemic Research Framework (aka Natural Inclusional Playspace). We will do this through creative means including engaging in reflective inquiry.

Following on from this, using a Gold Fish bowl approach, we will venture into (potentially) three interactive spaces in which you will choose which systemic approach(es) you would like to explore/experience further: PAI (Point Attractor Inquiry); Participation Compass or Presence in Action. What happens in this phase of the workshop will be sourced by those in the room and what is 'present' and 'current' for them.

We will engage in an emergent, exploratory way which may raise as many questions as answers for you. The final part of the workshop will give us a chance to share experiences, insights and questions.

THE COMMON GOOD GAME

15:30-18:30, Sibson Building, SR6

OR61A339

Ariella Helfgott, University of Oxford

The Common Good Game is a gamified process to explore our collective aspirations for society, and the kinds of actors and institutions that support them, in the face of difficult social and environmental justice issues. Essentially, it is an experiential way to rethink The Common Good for a better shared future. In this session we will play the game.

We live in a divisive and polarizing era. Societies are increasingly fragmented. We are losing trust in our institutions and governments to act in our interests. We have growing economic divisions, ideological divisions and contests over values. In various parts of the world we are facing disintegration of the social contract, failure of planned economies, losses of human dignity, the decline of politics and the public service and environmental unsustainability. Have we lost sight of 'the common good'?

The way societies negotiate 'the common good' will have a large impact on the shape of future societies and on the capacity of those societies to cope with increasing social and environmental pressures. Thus, it is ever more important to create dialogue on 'the common good'. However, fragmentation and polarization makes such conversations increasingly difficult. The Common Good Game was developed to overcome these difficulties. It provides a shared context and facilitates articulation of the types of societies we would like to live in, irrespective of our positions within them. It is based on extensive research into social differentiation and its impacts on life outcomes, the environmental consequences of the way we live, and how these factors can be mediated by policies. Rather than assuming a universal or hegemonic understanding of 'common good' it allows each group of people to negotiate the common good in their own context. It's also fantastic fun to play!

Thursday 5 September

JOINT WORKSHOP WITH SOFT OR AND PROBLEM STRUCTURING METHODS AND SYSTEM THINKING STREAMS

THE LEVEL 7 SYSTEMS THINKING PRACTITIONER APPRENTICESHIP

11:00-12:30, Sibson Building, SR6

OR61A216

John Rogers, Wiltshire Council – Chair, Trailblazer Committee

Ian Cammack, Lancaster University

The Systems Thinking Practitioner Apprenticeship is aimed at practitioners working in complex problem situations, which require cross boundary collaborations within and between organisations. It is likely that this apprenticeship will be attractive to individuals (and organisations) working in central and local government; as well as those working in multilaterals, the health service, defence or globalised corporations with complex supply chains and/or partnership relationships.

This workshop is aimed at providing an overview of this apprenticeship. This coverage will include the:

- purpose, value and anticipated focus of the practitioner's work
- knowledge, skills and behaviours included in the apprenticeship
- requirements for the end point assessment.

It is likely that this presentation will be of interest to:

- organisations seeking to invest their apprenticeship levy in the development of middle level practitioners, and in some instances in the development of future senior managers;
- individuals seeking to understand the opportunities for professional development and recognition
- training providers (including universities)/potential EPAOs interested in offering this apprenticeship and its assessment to employers

Other Activities

There's plenty more of interest to those wanting to make an impact through OR61:

Practically oriented presentation streams including:

Behavioural OR
Big Data and Digitalisation
Combinatorial and Global Optimisation: Exact and Heuristic Approaches
Control Theory and its Applications to OR-related Fields
Data Science: Techniques and Industrial Applications
DEA and its Applications
Forecasting
Healthcare Applications
Locational Analysis: Theory and Applications
Logistics and Transportation
Multi Criteria Decision Making
OR & Strategy
OR Applications in Public and Government Services
OR for Sustainable Approaches in Community Contexts
Reliability and Applied Stochastic Processes
Simulation
Soft OR and Problem Structuring
Sustainable Supply Chain Management
Sustainable Development Goals
Systems Thinking

For more information about all the MAI events: please email John Medhurst at john@larrainzar.co.uk or Hilary Wilkes at hilary.wilkes@theorsociety.com. You can also visit the MAI desk or the conference registration desk in Sibson building Atrium.



OR61: Making an Impact Programme Outline

Wednesday 4 September 2019, Sibson Building, University of Kent

	Tools Room: MBA	Techniques Room: SR5	Systems Thinking Room: SR2	Data Science Room: PC1	Practice Room: SR1	Problem Solving Room: SR6
8:30			Welcome and MAI Introduction John Medhurst **Lecture Theatre LT3**			
9.00		Speed Networking Luxe Huxtable **Chipperfield Building SR5**		Framing the Problem Davín Parrott	OR in Education L7 Apprentice Alistair Clark	
10.30			Coffee Break			
11.00	Introduction to modeFrontier Novella Saccenti	Resource Mapping Martin Kunc	Using Systems Thinking in OR Phil Jones	Exploring Data Davín Parrott	OR and Artificial Intelligence Michael Mortenson	Grand Challenges of Kent Miles Weaver
12.30			Lunch			
13.30			Presidents Medal			
15.00			Tea Break			
15.30	Tools Room: MBA SIMUL8 Tom Stephenson **Kennedy Building KenPC3**	Techniques Room: SR5 Creativity Workshop Dennis Sherwood	Systems Thinking Room: SR2 Attending, Responding, Becoming Louie Gardiner	Data Science Room: PC1 Predictive Modelling Davín Parrott	Practice Room: SR1 OR in Education and the L7 Apprenticeship Alistair Clark	Systems Thinking Room: SR6 The Common Good Game Ariella Helfgott
17.00						
18.30						