

# An Introduction to the Magenta Book Supplementary Guide on Handling Complexity in Policy Evaluation

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# Background

- ❖ CECAN was asked to produce a Supplementary Guide for the 2020 revision of the Magenta Book, on complexity.
- ❖ *Handling Complexity in Policy Evaluation* is based on three years' research and development of evaluation methods by CECAN.
- ❖ It is published by HM Treasury and accompanies the 2020 edition of the Magenta Book, both out later this month.

# Today's *sneak peek*

**Now**

**An Introduction to the *Magenta Book*  
*Supplementary Guide on Handling*  
*Complexity in Policy Evaluation***

Followed by Q&A

3:00-3:30pm

Break and refreshments

**3.30pm**

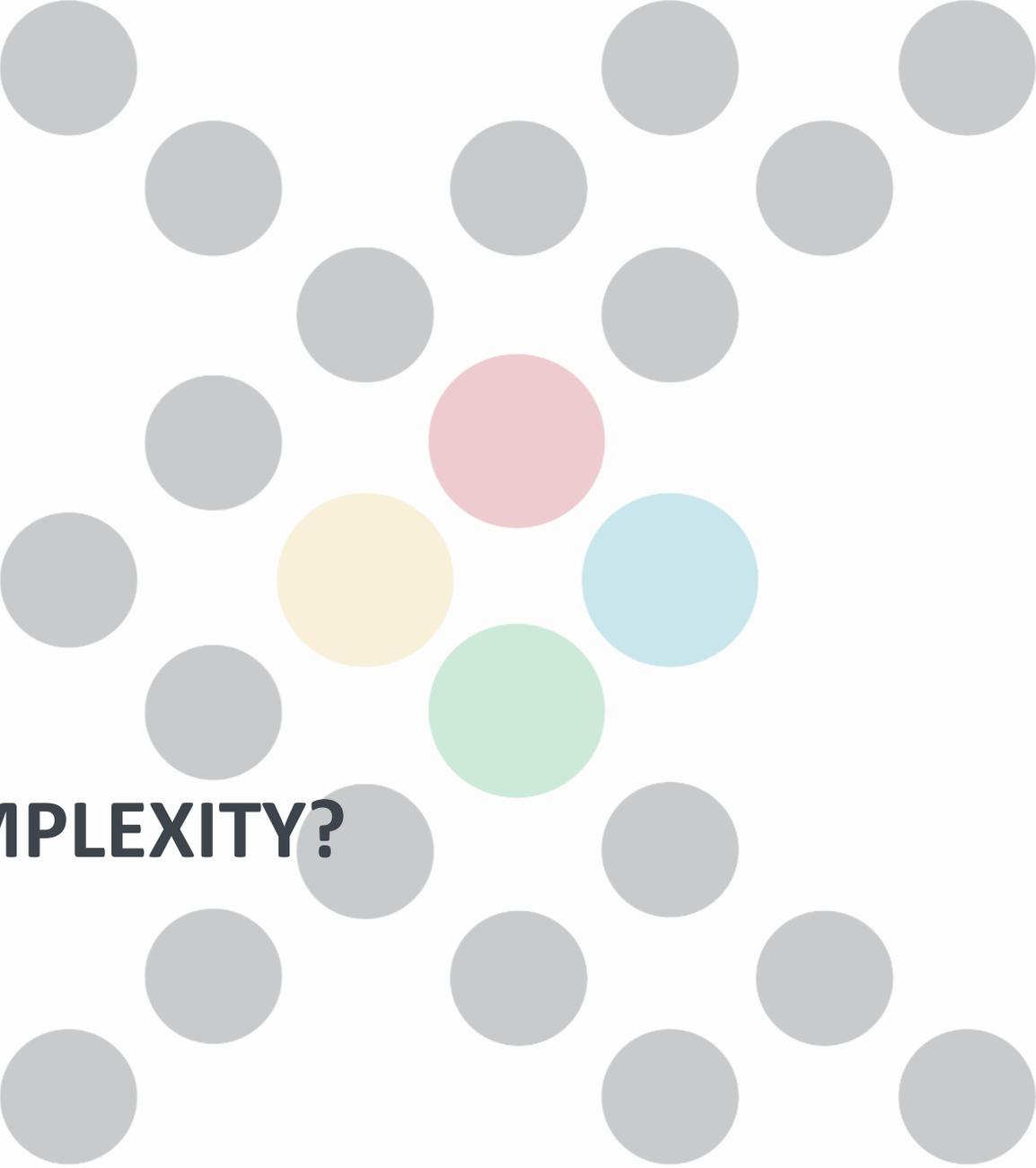
**Commissioning and management of  
complex evaluation**

**4:00pm**

**Selecting complexity-appropriate  
evaluation approaches**

4:30pm

End



**WHAT IS COMPLEXITY?**

# What is a complex system?

Most useful to consider complex *systems*

- ❖ **Consist of many diverse, interacting components**
- ❖ **Non-linear and non-proportional interactions between the components;**
- ❖ **Components adapt or learn in response to change**

Examples include ecosystems, economies, societies, cities, industrial networks, and the interconnections between them. All social systems are complex systems.

*All policy deals with complex systems*

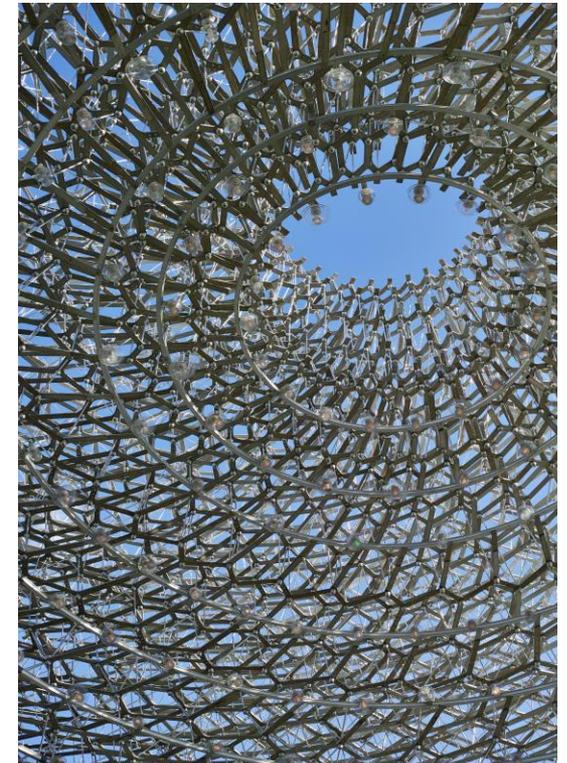


# Simple...complicated...complex....



# Another way of putting it...

❖ **“Wicked” problems** –persistent, intractable, multi-dimensional, **complex**



# Complex System Policy Challenges

- ❖ Getting to **net zero GHG** emissions
- ❖ **Adaptation** to climate disruption
- ❖ Post-Brexit **land use choices and conflicts**: sustainable agriculture, housing, infrastructure, ecosystem renewal
- ❖ Post-Brexit sustainable **industrial strategy**
- ❖ New waves of **automation and AI**
- ❖ **Health and social care** in the face of all the above
- ❖ **Plus...**
- ❖ **the *interactions* between all these complex policy clusters...**
- ❖ **And their interactions with ‘events, dear boy, events’ – eg *coronavirus***

# Intervening in complex systems presents fundamental challenges

- ❖ Societal complex systems are *never fully knowable* –we are always dealing with uncertainty
- ❖ Complex systems are *dynamic* and adapt in response to intervention – changing the rules of the game as we play it
- ❖ *Complex legacies and path-dependency* to be dealt with
- ❖ *Predicaments* more than problems?
- ❖ We can *manage and steer* complex systems not solve or control the problems they pose
- ❖ **How should we approach all this?**

# Why this guide is important

- ❖ The challenges of – and importance of understanding – complexity
  - For policy-making
  - For evaluation
  - For cooperation and co-production of policy between agencies and with stakeholders beyond government



# Key features of complex systems

	<h3>1. Feedback</h3> <p>When a result or output of a process influences the input either directly or indirectly. These can accelerate or suppress change.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A thermostat in a room, an automatic pilot, other around them, more positive feedback.</li> <li>- The faster you drive to make a constant body temperature (negative feedback).</li> <li>- In the cellular changes, metabolic rates, and neurons their growth rate jumps. These look back into the system (positive feedback).</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Feedback loops can lead to runaway effects, or can counteract through dampening of effects - feedback.</li> <li>- Feedbacks are reinforcing and accelerate change.</li> <li>- Negative feedback suppresses change and is stabilising/regulating.</li> </ul>	<h3>9. Tipping points</h3> <p>The point beyond which system outcomes change dramatically. Change may take place slowly initially, but suddenly increase in pace. A threshold to the point beyond which systems become suddenly changes.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- The gradual, then sudden proliferation of a religious faith.</li> <li>- Social unrest increasing leading to a regime change.</li> <li>- Species population making a numbers such to the extent that it can no longer stand on its own legs.</li> <li>- Sudden change can happen and we might not know it is coming.</li> <li>- Knowledge of tipping points can be used to effect change in a system. You can aim to get a system past a tipping point (an idea involves in the 'formation of society' debates).</li> </ul>	
	<h3>2. Emergence</h3> <p>New, unexpected higher-level properties can arise from the interaction of components. These properties are said to be emergent if they cannot easily be described, explained, or predicted from the properties of the lower level components.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A flock of birds, a market economy, emerge from the interaction of birds, humans &amp; others.</li> <li>- A traffic jam as an emergent phenomenon, caused by the interaction of drivers.</li> <li>- Consciousness is an emergent property of the interactions of the neurons in our brain.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Do not rely on and extrapolate from a single case to see simply from the interaction of lower level entities. These new properties can affect the lower level components.</li> <li>- Consider how to understand unpredictable emergent phenomena at your domain.</li> </ul>	<h3>10. Change over time</h3> <p>Complex systems inevitably develop and change their behaviour over time. This is due to their openness and the adaption of their components, but also the fact that these systems are usually out of equilibrium and are continuously changing.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- The increasing probability changes direction when one of the constraints patterns changes (e.g. weather, traffic, etc.)</li> <li>- The constraints on the system, or what is called as 'boundary conditions', shifts over time.</li> <li>- Constraints always include some form of link between plans, to trials, to feedback.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Do not expect automatically successful complex systems have reached a stable state.</li> <li>- Do not rely on the system being the same in the future.</li> </ul>	
	<h3>3. Self-organisation</h3> <p>Regularities or higher-level patterns can arise from the local interaction of autonomous emergent-level components.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- Division of the labour of ants.</li> <li>- The formation of stars or planet moving in opposite directions on a crowded planet.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Groups and subsystems behaviour can create order at larger scales.</li> <li>- The higher level order requires only local or lower-level interactions.</li> <li>- Order often spontaneously emerges from local order when a plan and part of the system is disrupted.</li> <li>- Emergence and self-organisation are closely related concepts. Self-organisation can cause emergent phenomena, but emergent phenomena do not have to be self-organising.</li> </ul>	<h3>11. Open system</h3> <p>An open system is a system that has external interactions. These can take the form of information, energy, or material resources into or out of the system boundary. In the social sciences an open system is a process that exchanges material, energy, people, capital and information with its environment.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A local production company change its response to change in local factors as well as the availability of resources.</li> <li>- Open systems are open to be used.</li> <li>- Open systems that do not need to be used as an influence.</li> </ul>	
	<h3>4. Levers and hubs</h3> <p>There may be components of a system that have a disproportionate influence because of the structure of their connections. How these behave can help to mobilize change, but their behaviour may also make a system vulnerable to disruption.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A small number of people can be a hub, but if the network is otherwise very tight being isolated.</li> <li>- A single species isolated itself from the surrounding network through other species.</li> <li>- A small company may have a disproportionate effect across the financial system.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Identifying hubs and levers can help identify local places to intervene in complex systems.</li> <li>- Do not rely on a single hub or lever to understand a system's overall behaviour, change it.</li> </ul>	<h3>12. Unpredictability</h3> <p>A complex system is fundamentally unpredictable. The number and interaction of inputs/ causes/ mechanisms and feedbacks means it is impossible to accurately forecast with precision. Random noise can have a large effect. Complex systems are fundamentally unknowable at any point in time - so it is impossible to gather, store &amp; use all the information about the state of a complex system.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- The economy and the system is unpredictable because of the number and interaction of all actors.</li> <li>- The staff forecast the sales, instead we must negotiate uncertainty with sales.</li> <li>- Financial markets will always be unpredictable complex systems, however they can be used to explain and compare potential scenarios, and system behaviour.</li> <li>- Weather prediction is impossible in the long term.</li> </ul>	
	<h3>5. Non-linearity</h3> <p>A system is non-linear when the effect of inputs on outcomes are not proportional. The behaviour of a system may exhibit exponential changes, or change in direction, or increase in time, measure becoming decreasing, despite small or constant changes in inputs.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A small increase in price at a shop may mean that at a shop.</li> <li>- A new product may be slow to take off but after a point sales will accelerate, before slowing again.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Do not assume things are actually linear.</li> <li>- Exponential can mean that an exponential solution may not get a general or increasing solution as the structure of interactions. In complex systems, when an outlier or a hub is added, the output will not be double or half its original value, and may be completely different.</li> </ul>	<h3>13. Unknowns</h3> <p>Because of their complex causal structure and openness, there are many factors which influence (or can influence) a system of which we do not know the measurable existence of such unknowns mean we often see unexpected indirect effects of our interventions.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A potential social grouping operating in a policy area not anticipated by policy maker.</li> <li>- An individual player in a network with numerous potential feedback applications.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Expect the unknowns.</li> <li>- Be prepared to learn as the system evolves will become apparent that a major influence or be influenced by completely unexpected things.</li> <li>- New technology might make a fundamental change, leading to unexpected social effects.</li> </ul>	
	<h3>6. Domains of stability</h3> <p>Complex systems may have multiple stable states which can change as the context evolves. Systems gravitate towards such states, remaining there unless significantly perturbed. If change in a system passes a threshold, it may slide rapidly from another stable state, making change very difficult to reverse.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A small number of people can be a hub, but if the network is otherwise very tight being isolated.</li> <li>- A small number of people can be a hub, but if the network is otherwise very tight being isolated.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Knowledge of domains of stability can be used to effect change in a system. If we can push a system into a different, then we can change the system with a policy intervention that we have changed the system in a subtle way. We do not need to put in continuous effort to keep the system in the new state. This may be a policy change or a change of domain of stability.</li> <li>- What is possible in a system to allow discontinuous and likely to take everything states.</li> </ul>	<h3>14. Distributed control</h3> <p>Control of a system is distributed amongst many actors. No one actor has total control. Each actor may only have access to local information.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A small number of people can be a hub, but if the network is otherwise very tight being isolated.</li> <li>- A small number of people can be a hub, but if the network is otherwise very tight being isolated.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- There is no top-down control in complex systems. Decisions and reactions happen locally and the interactions of all these lower-order decisions can give us system-level properties such as stability, resilience, adaptation or other system emergent properties.</li> <li>- The best we can do is to "steer" the system.</li> </ul>	
	<h3>7. Adaptation</h3> <p>Complex or actors within the system are capable of learning or evolving, changing how the system behaves in response to interventions as they are applied. So, for example, in social systems people may communicate, interpret and behave differently to anticipate future situations. In biological systems, species will evolve in response to change.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- A small number of people can be a hub, but if the network is otherwise very tight being isolated.</li> <li>- A small number of people can be a hub, but if the network is otherwise very tight being isolated.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- The system will adapt to change in its environment. It is not an inherent or necessary to be in a state of change. It is not an inherent or necessary to be in a state of change. It is not an inherent or necessary to be in a state of change.</li> <li>- The system will adapt to change in its environment. It is not an inherent or necessary to be in a state of change. It is not an inherent or necessary to be in a state of change.</li> </ul>	<h3>15. Nested systems</h3> <p>Complex systems are often nested hierarchies of complex systems (called "systems of systems").</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- Brain - person - society - planet.</li> <li>- An organisation as made up of departments, made up of cells, made up of organs which use their own feedback, made up of organs, metabolic processes combined with genetic information back level in a complex system.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- Other complex systems exist, it is useful to be aware of the larger system of which it is a part, or the smaller systems operating within it.</li> <li>- The system of change in its environment may be taking place at a higher or lower level than the system in its environment.</li> </ul>	
	<h3>8. Path dependency</h3> <p>Current and future states, actions, or decisions depend on the sequence of states, actions, or decisions that preceded them - namely their (typical) temporal path.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- The order of events in a sequence will determine which that shapes any possible trajectory the path dependency is.</li> <li>- The sequence of events to lead to a new policy option depends on which other organisations also were involved.</li> <li>- The order of events in a sequence will determine which that shapes any possible trajectory the path dependency is.</li> <li>- The sequence of events to lead to a new policy option depends on which other organisations also were involved.</li> </ul> <p><b>LEARNING POINTS</b></p> <ul style="list-style-type: none"> <li>- What paths are we "locked into"? What paths might our actions be locked into? What is a threshold or a point of change (a point of path dependency) which "lock" might still exist?</li> </ul>	<h3>16. Multiple scales and levels</h3> <p>Actors and interactions in complex systems can operate across scales and levels. For this reason systems must be studied and understood from multiple perspectives simultaneously.</p> <p><b>EXAMPLES</b></p> <ul style="list-style-type: none"> <li>- Health issues can be considered at the scale of the individual physiology or behaviour, the household, community, society (local/national or global economy), health systems. Usually more than one scale is required to fully understand a problem.</li> <li>- Facing only one response means that individuals' ways, habits and activity, but also social, economic, factors and other factors. No one level is sufficient. The system is already about systems at multiple scales and levels in properties or dynamics of new scale often lead or about to effect others below.</li> </ul>	

<https://www.cecan.ac.uk/news/visual-representation-of-complexity>

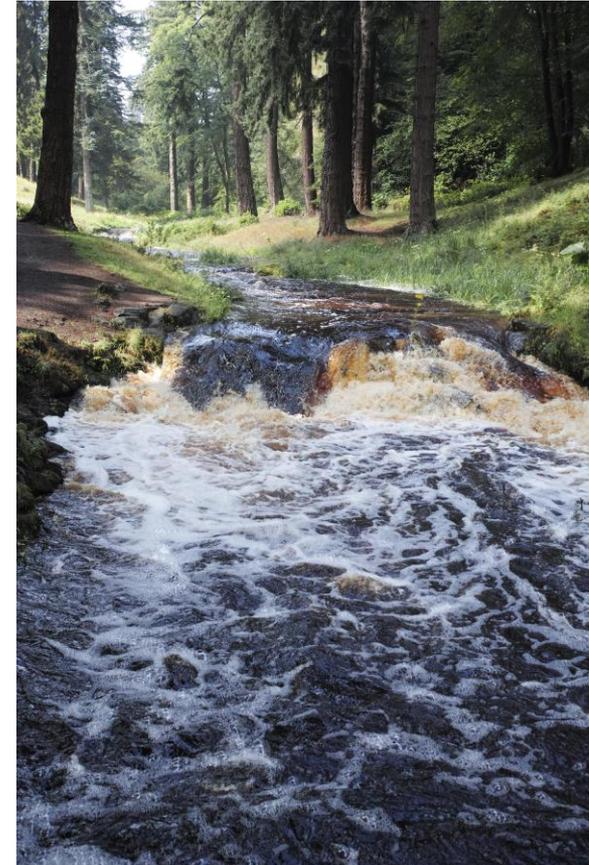
# Some complexity characteristics

- ❖ Feedbacks
- ❖ Tipping points
- ❖ Non-linearity
- ❖ Unknowns
- ❖ Multiple scales and levels of action
- ❖ Example: climate disruption



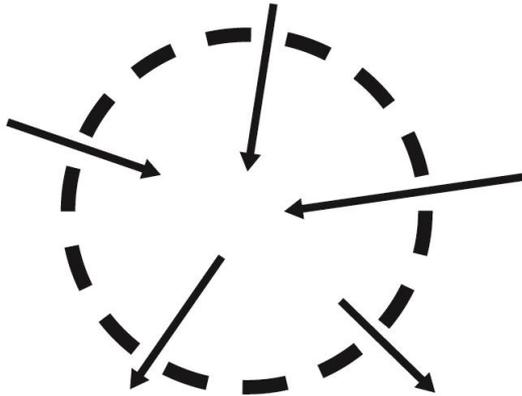
# Some complexity characteristics

- ❖ **Unpredictability**
- ❖ **Unknowns**
- ❖ **Emergence**
- ❖ **Example: climate change responses (natural solutions, geo-engineering experiments)**



# Key features of complexity:

## Complex systems are open systems

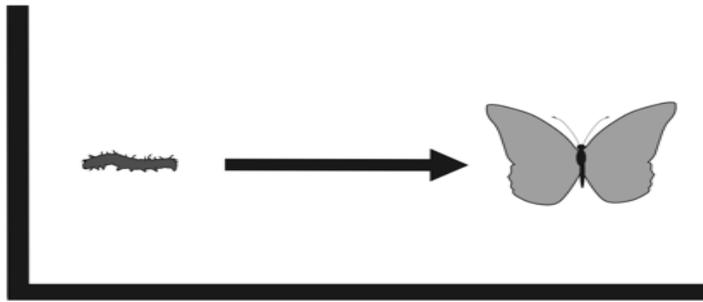


An **open system** has many links and connections into its wider environment, and is affected by changes happening elsewhere.

**Example** ‘delayed transfer of care’: patient is ready to leave hospital, but still occupying bed. Social care system, not NHS, is responsible for substantial proportion delays: Longer stays in hospital can affect a patient’s health and impact waiting times in A&E departments and for planned surgery

## Key features of complexity:

### Complex systems are constantly changing

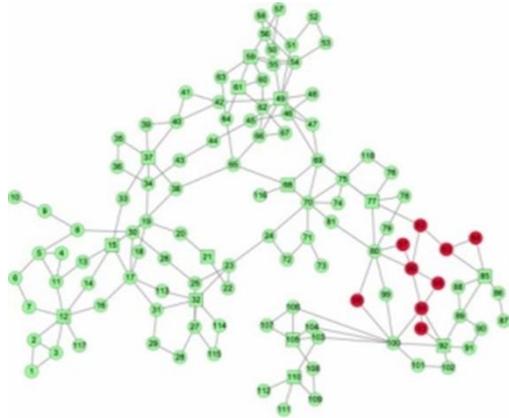


Complex systems are in a **constant state of change.**

**Example** new technological and social developments constantly drive policy change. For example, social media, the mass availability and use of individuals' data within a globalized economy have led to new behaviours and business models, with huge policy and legal implications

# Key features of complexity:

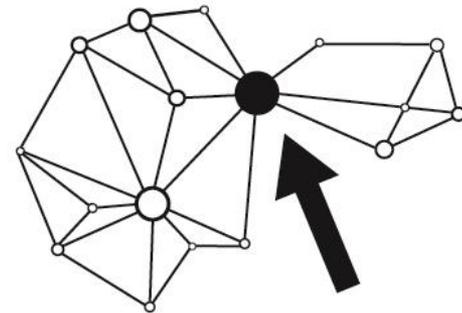
## Multiple relationships, levers and hubs



A complex system has **multiple components** – in human systems this means multiple stakeholders and multiple perspectives

### Example

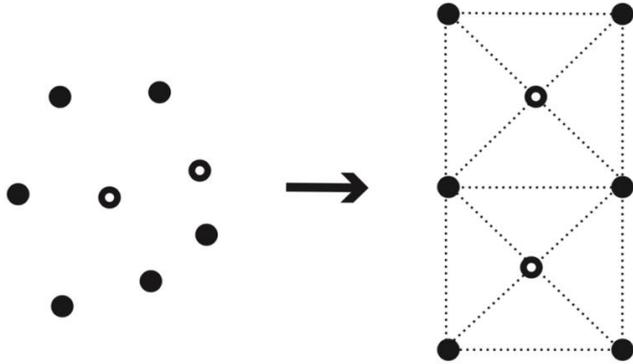
A well-connected and highly motivated individual or group may be mobilised to champion a particular cause. They can equally become a major obstacle to change through vetoing or blocking it. If a 'keystone' (highly influential, but low abundance) species in an ecosystem becomes extinct, there may be cascading extinctions amongst connected species



**Levers and hubs:** Some components have more influence than others because of their connections.

# Key features of complexity:

## Self organisation and emergence



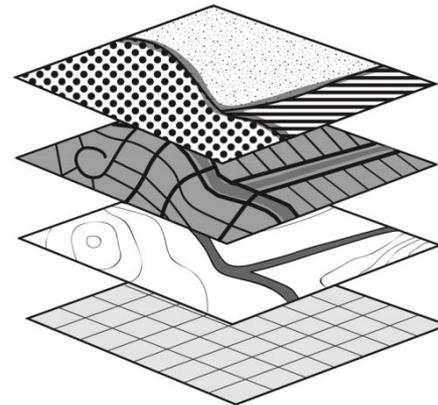
**Emergent properties:** New, unexpected higher-level properties can arise from the interaction between the components within a system.

Complex systems are **self organising**: global patterns emerge from local interactions

**Example** Emergent properties can be seen in the formation of social movements, social norms and new markets

System resilience or fragility (financial systems, ecosystems) is an emergent property

Policy often aims to encourage emergence—eg market formation



# Key features of complexity:

## Adaptation and feedback



Components or actors within the system **learn and evolve**, changing the behaviour of the whole system.

### Example:

Bacteria become resistant to antibiotics,  
corona virus passes to humans  
Individuals may try to 'game the system'  
(e.g. by heating large number of small units  
to obtain a renewable heating subsidy)

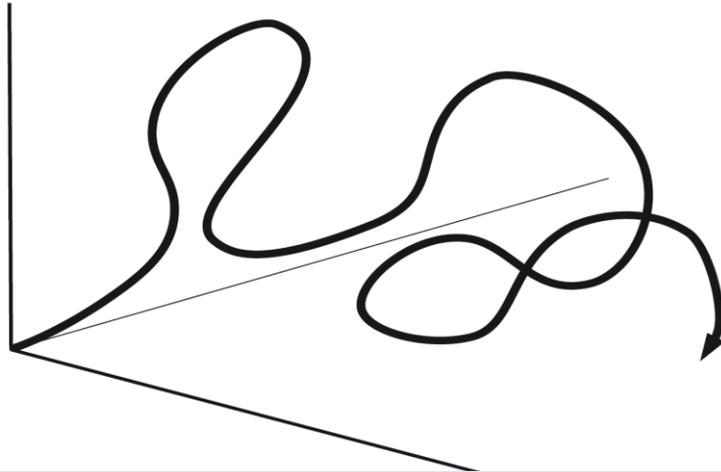
**Feedback loops** happen when one process or interaction influences the input into the next iteration of the same process. They can increase or suppress the changes taking place.



**Example** Climate change,  
melting permafrost increases  
methane emissions and  
global warming

# Key features of complexity:

## Non-linearity

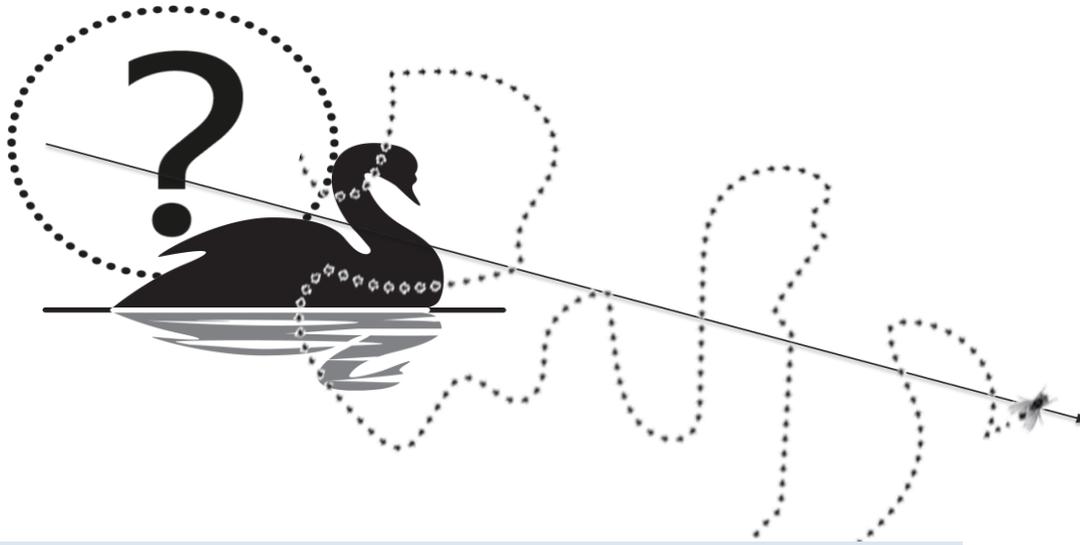


### Example

A new product may be slow to take-off but after a certain point sales will accelerate, before slowing again as the market is saturated e.g. renewables

**Non-linear** relationship between inputs on outcomes mean that outputs are not proportional to inputs: small changes may lead to large effects in one place, but have little impact elsewhere. Sudden large-scale changes, or reverses in direction, may occur despite small or consistent changes in inputs

# Key features of complexity: Unexpected Indirect Effects



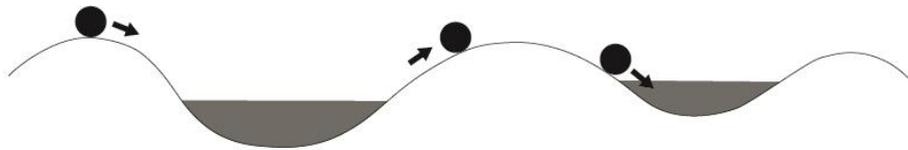
**Unexpected indirect effects** Long causal chains within systems, generated by multiple interactions between components, can mean that intervention or change in one part of the system can lead to unexpected change in another, seemingly remote, component

## Example

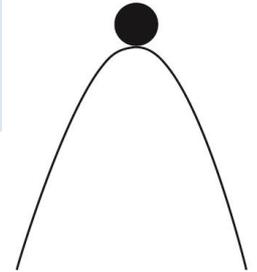
the interaction between changing agricultural practice (increased winter planting), climate change (more extreme rainfall) and housing policy (building in floodplain) may have decreased resilience to flooding

# Key features of complexity:

## Tipping points and attractors/domains of stability



**Tipping points** are the threshold beyond which a system goes through rapid change into a different state.



Systems may have several relatively stable states (**attractors or domains of stability**).

Changes in the wider context can cause these to evolve – moving a system from one stable state to another.

### Example

Economic recessions, the existence of 'poverty traps' and the characteristics (and social segregation within) different neighbourhoods. Gradual, then sudden, gentrification of a neighbourhood, changing its demographics and character rapidly

# Complex Systems Present Evaluation Challenges

Complex system challenges	Evaluation challenges
Multiple interactions and influences	<ul style="list-style-type: none"><li>• Long, <b>indirect causal chains</b> linking inputs to impacts</li></ul>
Systems may be in continual change, or may resist change	<ul style="list-style-type: none"><li>• Objectives, design and data requirements may <b>change over time</b></li><li>• The programme may not reach a 'final state' when the evaluation comes to an end</li></ul>
Openness Context (and history) matters	<ul style="list-style-type: none"><li>• Hard to establish a clear boundary <b>Difficult to standardise</b> the intervention</li><li>• Outcomes may vary from one context to another</li></ul>
Multiple perspectives	<ul style="list-style-type: none"><li>• Need data from <b>multiple sources/informants</b></li></ul>
The nature of the change is unpredictable Multiple causality	<ul style="list-style-type: none"><li>• Evaluation plans <b>may need to change</b> to address emergence of unexpected features</li><li>• <b>New methods</b> may be needed for causality and attribution</li></ul>
Complexity is difficult to communicate	<ul style="list-style-type: none"><li>• Difficulties in communicating methodology and findings</li></ul>

**FROM OVERWHELMING COMPLEXITY**

**TO**

**ACTIONABLE COMPLEXITY**





Magenta Book Supplementary Guide on Handling Complexity in Policy Evaluation

# **WHAT'S INSIDE THE GUIDE?**

# Handling Complexity in Policy Evaluation

## Magenta Book 2020 Supplementary Guide

CECAN has produced a *Supplementary Guide* for the 2020 revision of the Magenta Book.

The Magenta Book, published by HM Treasury, is the key UK Government resource on evaluation, setting out central government guidance on how to evaluate policies, projects and programmes. The *Magenta Book 2020 Supplementary Guide: Handling Complexity in Policy Evaluation* is based on three years' research and development of evaluation methods by CECAN. It is published by HM Treasury and accompanies the 2020 edition of the Magenta Book.

### What is the Supplementary Guide and why is it important?

Complex systems are all around us. Their characteristics make their behaviour hard to predict and they present challenges to policy making and evaluation. The *Supplementary Guide* explains what complexity is, its implications, and how evaluators and policy makers can plan, deliver and use complexity-appropriate evaluation to work with this complexity.

### Who is it for?

The *Supplementary Guide* is for policy makers, analysts and commissioners of evaluations, as well as evaluation practitioners including public sector evaluation contractors.

### How do I use it?

The *Supplementary Guide* is designed to be used alongside the Magenta Book. It provides further guidance on how to use evaluation appropriately as an effective management tool when policies, programmes, projects, or their evaluations are particularly challenging, intractable, or *complex*.

## Inside the Magenta Book 2020 Supplementary Guide —Handling Complexity in Policy Evaluation

### WHAT IS COMPLEXITY

An accessible introduction to complexity and why it matters for policy-making. Describes and illustrates the properties of complex systems with images, definitions and examples.

### THE CHALLENGES OF COMPLEXITY TO EVALUATION

Illustrates why and how complexity creates challenges for evaluation, with examples.

### COMMISSIONING AND MANAGING EVALUATIONS

How planning and managing can help to understand, anticipate and navigate the challenges posed by complexity. Includes a list of questions that commissioners can use to aid planning at each stage of the evaluation planning process.

### SELECTING COMPLEXITY-APPROPRIATE APPROACHES

How to choose the approach or combination of approaches appropriate for a particular evaluation. Contains several useful tables including:

- Answering evaluation questions – matching evaluation questions with methods and approaches.
- Tackling different aspects of complexity – matching complexity challenges with methods and approaches.
- Circumstances affecting feasibility – exploring the strengths and weaknesses of different methods and approaches, including the specialist skills and levels of resource required.

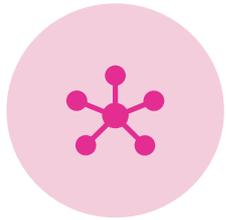
## DOWNLOAD

The Magenta Book 2020 *Supplementary Guide: Handling Complexity in Policy Evaluation* can be downloaded from:

[www.cecan.ac.uk/magenta-book-complexity-guide](http://www.cecan.ac.uk/magenta-book-complexity-guide)

The Centre for the Evaluation of Complexity Across the Nexus (CECAN) is a national research centre hosted by the University of Surrey that brings together a unique coalition of experts to address some of the greatest issues in policy making and evaluation.

# Inside the Supplementary Guide

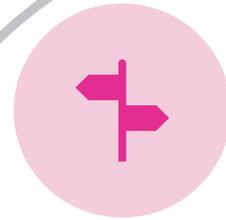


**WHAT IS  
COMPLEXITY**

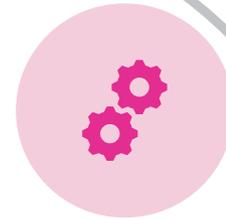
“what you should know”



**THE CHALLENGES  
OF COMPLEXITY TO  
EVALUATION**



**COMMISSIONING  
AND MANAGING  
EVALUATIONS**



**SELECTING  
COMPLEXITY-  
APPROPRIATE  
APPROACHES**

“what you can do”



Magenta Book Supplementary Guide on Handling Complexity in Policy Evaluation

# HIGHLIGHTS

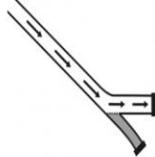
# Highlight 1: Complexity images and examples



Accessible  
definition

Illustrative examples

Properties  
of complex  
systems,  
illustrated

Property of Complex System <sup>5</sup>	Definition	Examples
 <p>Tipping points</p>	<p>Closely linked to the idea of 'domains of stability', tipping points refer to the threshold beyond which a system goes through rapid change into a different state. It can be seen in situations in which change has initially been quite slow, but suddenly increases in pace.</p>	<ul style="list-style-type: none"> <li>• In the natural world: A forest ecosystem may be stable over a large range of average rainfall, but may rapidly become desert as rainfall decreases beyond a certain threshold</li> <li>• Social world example: The gradual, then sudden, gentrification of a neighbourhood results in underlying social unrest suddenly increasing, leading to a regime change and social media 'storms' in which minority opinions become the majority.</li> <li>• In the policy world: the sale of solar panels to householders increased very slowly over several years until suddenly taking off in response to a change in feed in tariffs and word of mouth (across neighbourhoods).</li> </ul>
 <p>Path dependency</p>	<p>The future development of a complex system depends on its history - how it got to its present state - as well as where it is currently. The order in which policy instruments or decisions are introduced may affect their cumulative impact.</p>	<ul style="list-style-type: none"> <li>• Natural world example: Evolution is a highly path-dependent process. Organisms cannot radically change from their predecessors but change and modify themselves by mutations of adaptations that already exist. This is why evolution seldom finds optimal solutions.</li> <li>• Social world example: The health over the whole of the lifespan of an individual can be influenced by the diet and wellbeing of their parents and the conditions under which they were born and brought up (one of the causes of health inequality).</li> <li>• In the policy world: The choice of an organisation to lead a new policy initiative, and their history and reputation, may have a powerful influence over the way in which the policy is delivered, and how other organisations behave in relation to the policy.</li> </ul>

# Highlight 2:

## Questions for commissioners and managers

### Understanding

- E.g.: To what extent does the policy or programme, or its context, demonstrate any of the features of complexity?

### Evaluation design

- E.g.: Have opportunities been built in to reconsider the data collection methods, in order to accommodate any unexpected elements that might emerge during the evaluation?

### Conducting the evaluation

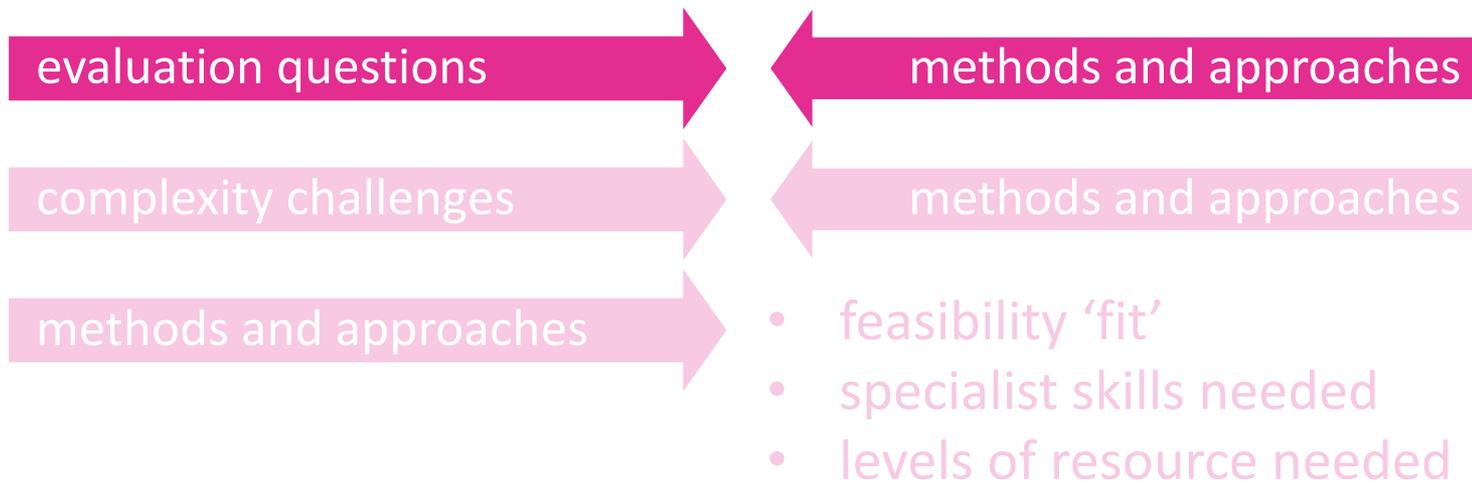
- E.g.: Is the commissioning specification broad enough to allow for initial exploratory activities, new evaluation approaches and adaptation of these as new information emerges?

### Using and disseminating findings

- E.g.: Were recipients of the evaluation findings given an indication of the complexity of the policy or programme, and how this might impact on the findings or recommendations?

# Highlight 3:

## Methods and approaches tables



# Highlight 3:

## Methods and approaches tables

Evaluation question	Approach / method	Benefits
What is important to different groups, who can champion change?	<b>Most significant change</b> <b>Participatory system mapping</b>	Most significant change aims to clarify the value of a system Participatory system mapping helps to build a system map Structures conversations around delivering change, clarifying what is needed If begun at the options stage, it provides a framework for design, piloting and full implementation
What levers are generating change, what may be inhibiting change?	<b>Big data and associated methods</b>	Might ultimately allow for more targeted interventions subsequently spread to other areas Can provide near real time data
How well was the policy implemented? How can this be improved?	<b>Participatory, adaptive approaches</b>	Generates trust and buy-in Identifies champions and agents for change
Is the policy making a difference, by how much?	<b>Experimental approaches</b> <b>Statistical</b>	Provides robust evidence of difference, and to what extent Weaker than experimental approaches

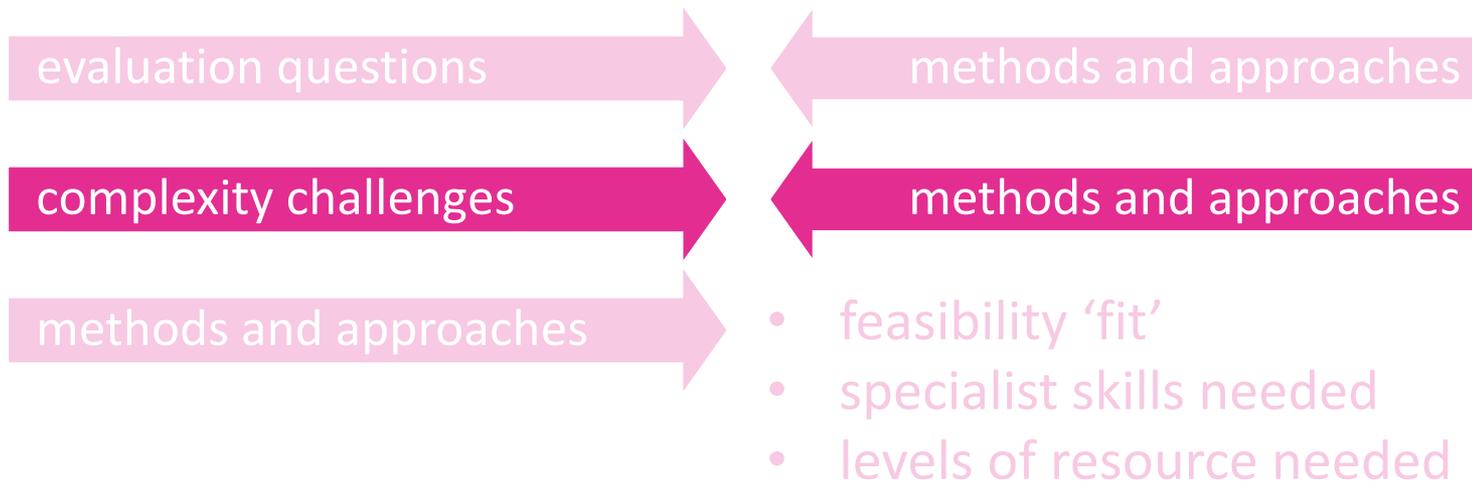
evaluation questions

complexity challenges

methods and approaches

# Highlight 3:

## Methods and approaches tables



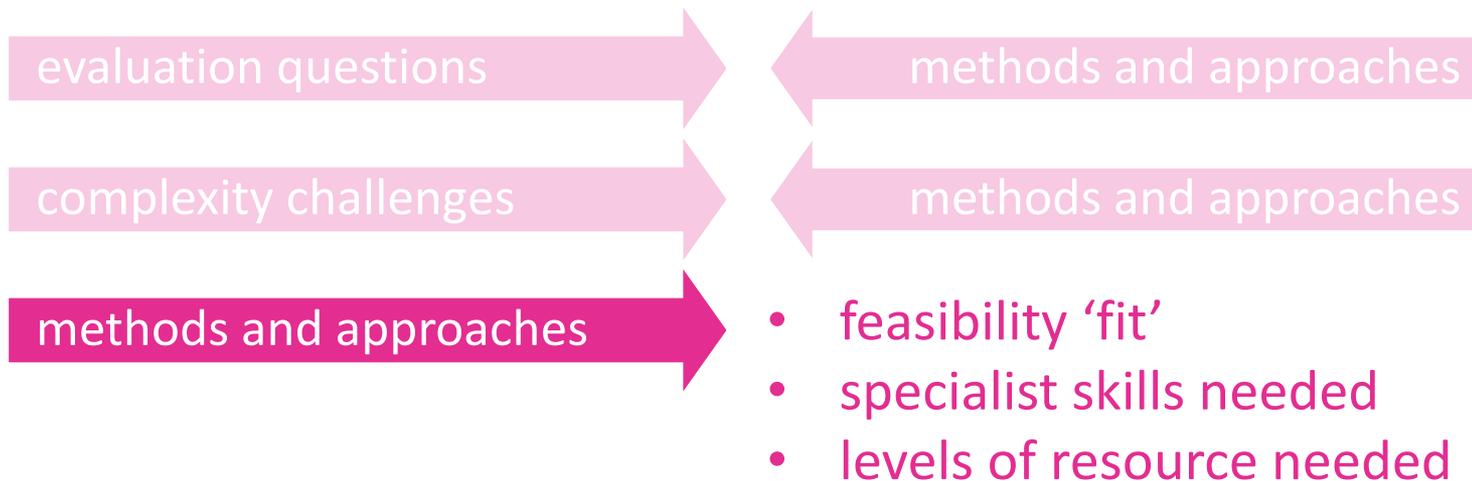
# Highlight 3:

## Methods and approaches tables

	<b>Complexity challenge</b>	<b>Approach / method</b>	<b>How it helps</b>
evaluation questions	Sensitivity to context	<b>Generative causation, configurational and system mapping and modelling</b>	Treats context as a variable rather than a factor to be ignored. Modelling complex systems is
complexity challenges	Openness/ open system	<b>System mapping</b>	Can guide division of change into multiple programmes into multiple programmes without losing sight of systems and between environment
methods and approaches	<b>Multiple interactions and influences</b> Long, indirect causal chains linking inputs to impacts	<b>System mapping and modelling</b>	Can capture the key guide construction of change Provides a framework importance of relative impacts
	<b>Continual change, difficult to predict outcomes arising from e.g. feedbacks, non-linearity, tipping points, thresholds,</b>	<b>Computational system modelling</b>	Provides exploratory and “theoretically-informed” (widely agreed and agent based modelling the surface)
		<b>Predictive modelling</b>	Computational systems

# Highlight 3:

## Methods and approaches tables



# Highlight 4:

## Other resources

❖ The appendices link to further guidance and resources, including:

- General and sector-specific resources
- Practitioner guides and academic articles

# Using the Supplementary Guide

## ❖ Who is it for?

- Analysts
- Evaluation practitioners
- Policy-makers
- Evaluation commissioners

## ❖ How and when to use it?

- Alongside the Magenta Book
- When policies / programmes / projects or their evaluations are complex

## ❖ Where to find it?

- Later this month (launches on the 27 March)
- Link on your flyer

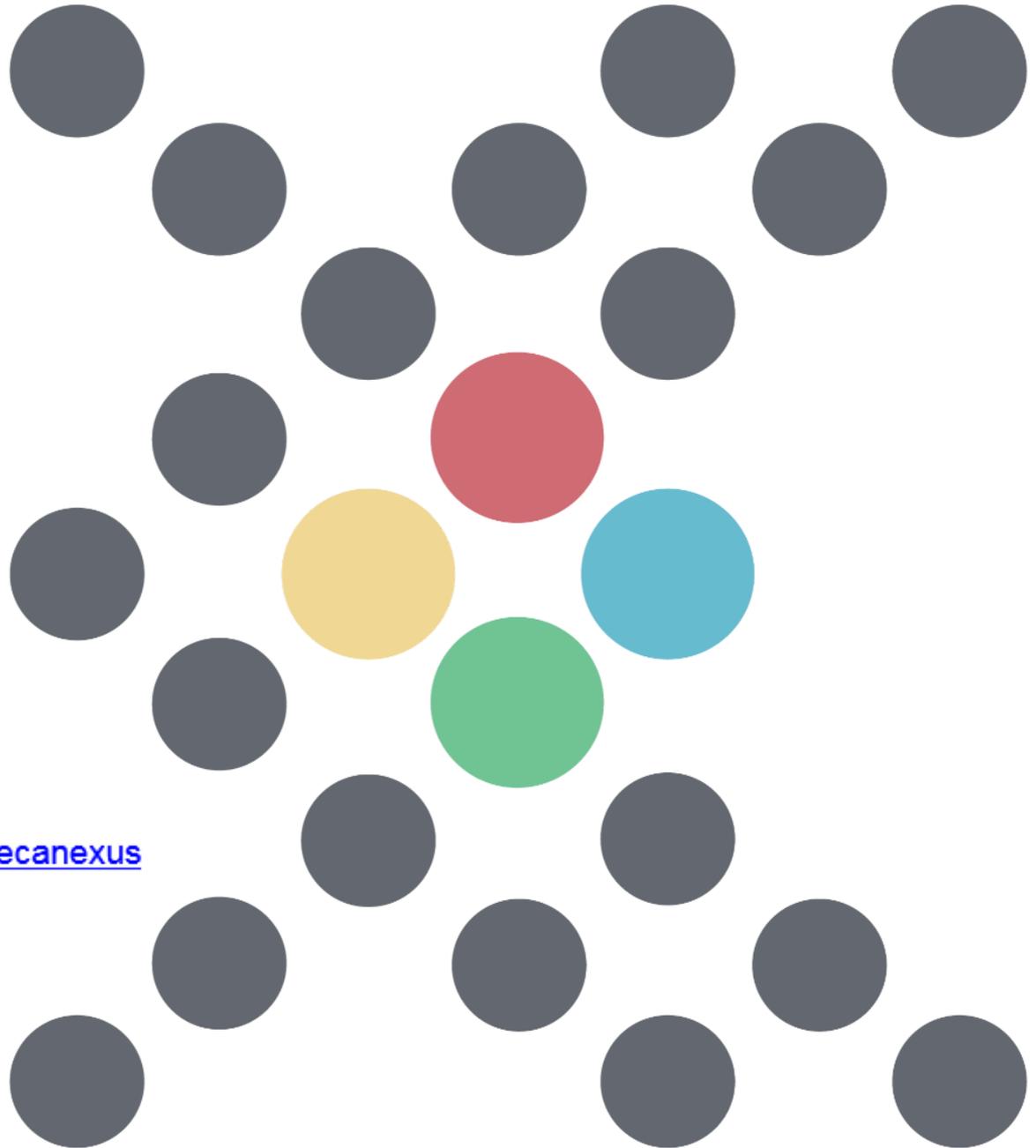
# THANK YOU

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Magenta Book Supplementary Guide on Handling Complexity in Policy Evaluation

# Q&A

- ❖ Examples of complexity challenges in policy, getting to net zero, AMR and corona virus, post-Brexit landuse, health and social care, flooding
- ❖ Essential challenges, system is never fully knowable and is in a state of constant change and adaptation
- ❖ Systems require adaptive management
- ❖ Aren't always "solutions", but might be steering approaches to guide system to better condition
- ❖ Managing not solving complexity
- ❖ Evaluation becomes even more crucial in this scenario
- ❖ CAS properties which connect to policy challenges and use most compelling examples
- ❖ Complexity is the norm