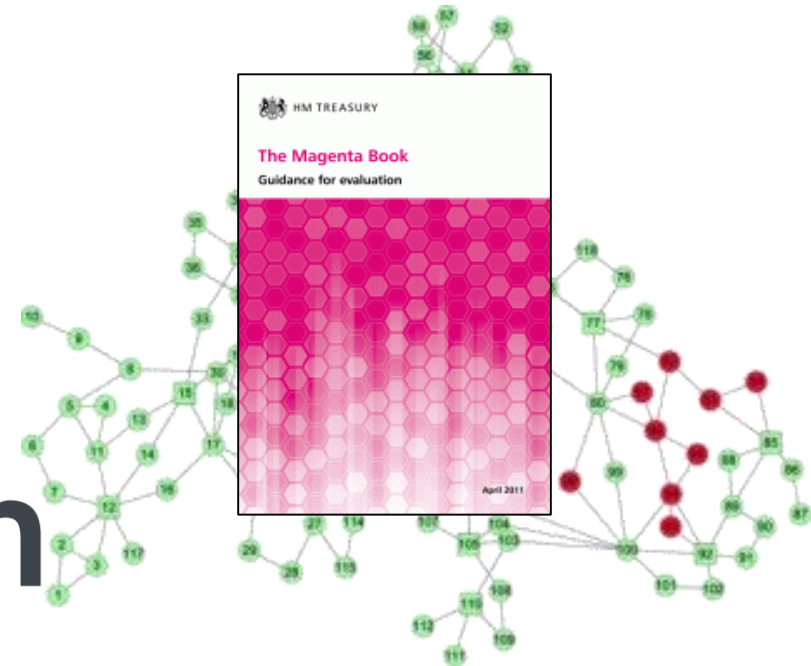Dione Hills and Helen Wilkinson

Developing guidance for government, dealing with complexity in evaluation

Towards an Annex to the
Magenta Book

Introduction

- The Magenta book is being revised.
- CECAN was asked to provide an annex on complex policy evaluation
- Our team combines expertise in:
  - evaluation of complex, adaptive systems, and
  - system mapping,

  with periodic review and input from:
  - the wider CECAN team
  - a Steering Group from departments

How we did it

A highly iterative and developmental process

Focused fairly rapidly on:

- The **nature** of complexity and complex adaptive systems
- Why this is a **challenge** for policy making and policy evaluation
- **Tips and questions** related to the design, commission and manage a complex appropriate evaluation
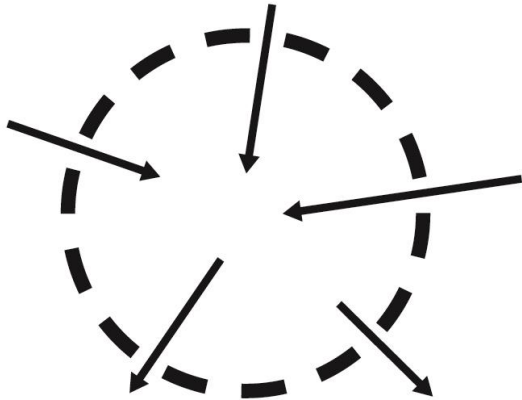- Selecting **complexity appropriate evaluation approaches**

Increasing levels of complexity

A policy or programme is increasingly complex

- The more organisations and individuals involved
- The more layers or levels of intervention involved
- The more dynamic the environment
- The greater diversity of opinion and views

Complex systems are open systems

An **open system** has many links and connections into its wider environment, which means that it can be powerfully affected by changes happening elsewhere.

The links may take many forms including the exchange of information, inflow and outflow <u>of</u> material or energy, or of individuals and social groups and money.

Example
A food production company may change rapidly in response to changes in food fashion or in the cost and availability of key ingredients.

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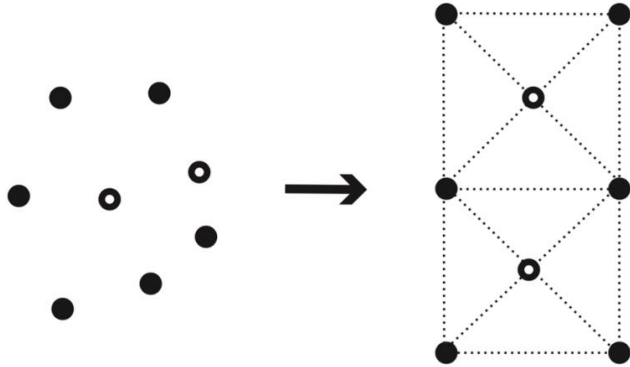
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Multiple relationships, levers and hubs
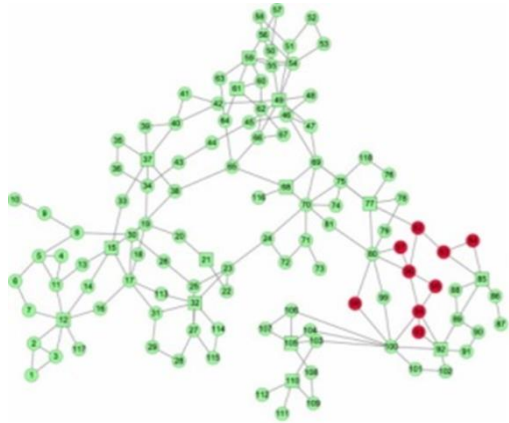
Some components of a system may have a disproportionate influence over the whole because of the structure of their connections.
Their activity may help to mobilise or slow down change, and their presence or absence make a system vulnerable to disruption…

Example
A well-connected and highly motivated individual or group may be mobilised to champion a particular cause. Alternatively, an individual or organisation may become a major obstacle to change through vetoing or blocking this

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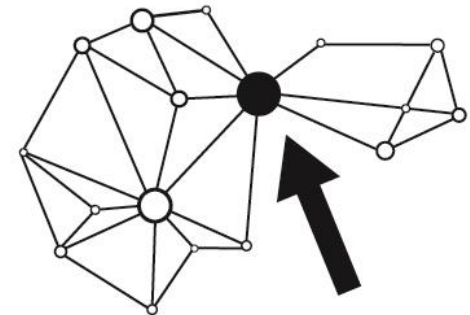
Self organisation and emergence

New, unexpected higher-level properties can arise from the interaction (and self organisation) between the components (individuals, groups or organisations) within a system.
These properties are said to be emergent if they cannot easily be predicted from the properties of the lower level components
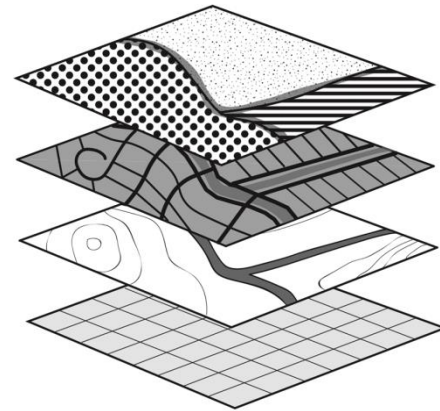
Adaptation and feedback

Feedback occurs when the output of one process or interaction influences the input into the next iteration of the same process. This can work to both increase and accelerate or to suppress the changes taking place.

Components or actors within the system are capable of learning or evolving, changing how the system behaves in response to an intervention.

Example:
Policy 'targets' may result in efforts to individually or collectively 'game the system' (e.g. by heating empty, or previously unheated, buildings to obtain a renewable heating subsidy

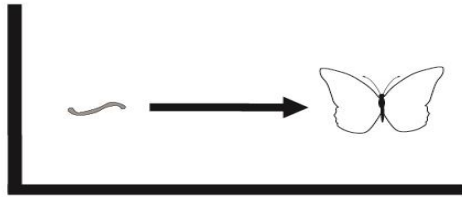# Non linearity, unpredictability and … unknowns
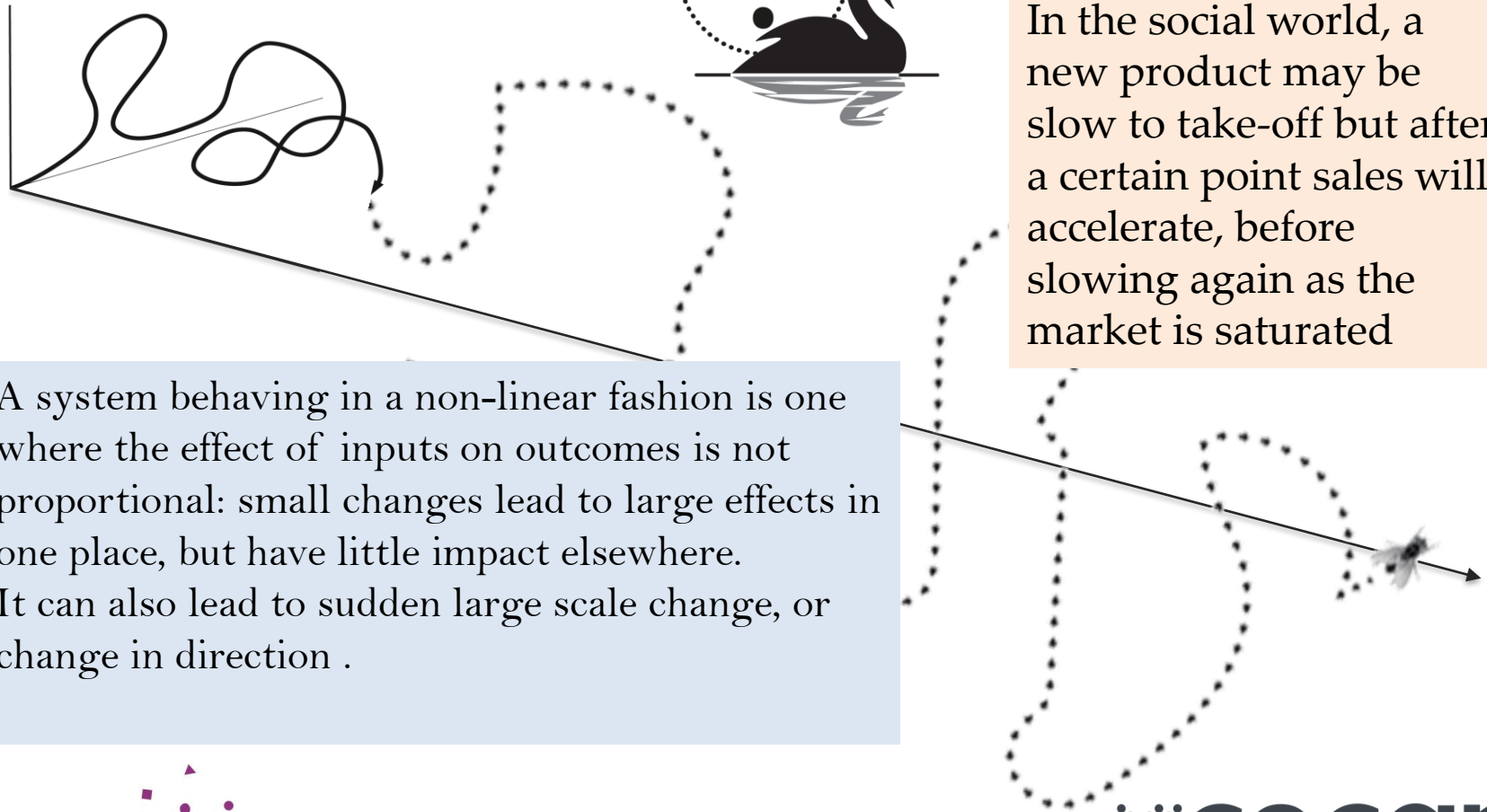
Example
In the social world, a new product may be slow to take-off but after a certain point sales will accelerate, before slowing again as the market is saturated

A system behaving in a non-linear fashion is one where the effect of inputs on outcomes is not proportional: small changes lead to large effects in one place, but have little impact elsewhere.
It can also lead to sudden large scale change, or change in direction .

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Change over time and path dependency

Path dependency is when the development of a complex system depend<u>s</u> on its history – how it got to its present state – rather than where it is currently.

Complex systems inevitably develop and change over time. This is due to their openness and the adaption of their components, but also because these systems are usually out of equilibrium and are therefore continuously in a process of change.

Example
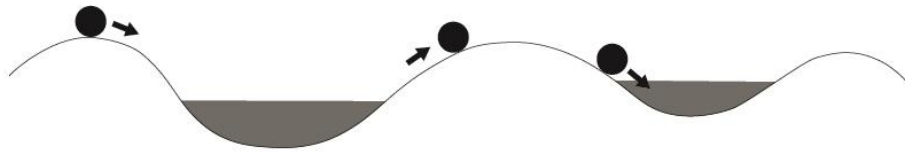The choice of an organisation to lead a new policy initiative, and their past history and reputation, may have a powerful influence over the way in which the policy is delivered, and how other organisations behave in relation to the policy .
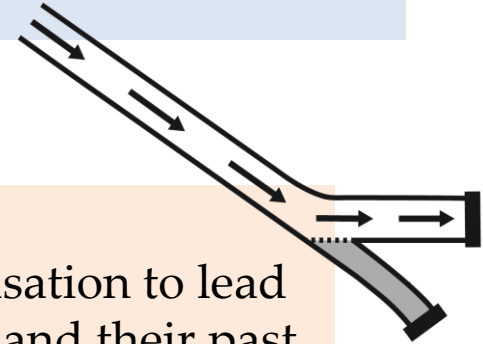
Tipping points and attractors/domains of stability

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

Systems may several relatively stable state (called attractors in complexity science) which may change as the context evolves.
If a system has multiple domains of stability, and a change in the system has moved beyond a certain threshold (or tipping point) the system can slide rapidly into another state, a change that may be very difficult to reverse.
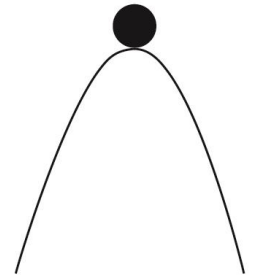
Example
Economic recessions, the existence of 'poverty traps' and the characteristics (and social segregation within) different neighbourhoods.

Challenges with complex systems

Complex system challenges	Linked to which features of complexity
Multiple interactions and influences	A central feature of complex adaptive systems
Systems may be in continual change, or may resist change	• Adaptation • Emergence and self organisation • Change over time • Domains of stability
Openness to outside influences Context (and history) matters	• Open systems • Path dependency
Multiple perspectives	• Multiple actors and relationships
The nature of the change is unpredictable Multiple causality	• Property non-linearity • Feedback loops • Levers and hubs • Tipping points • Domains of stability
Complexity is difficult to communicate	• Features above are not widely understood • Uncertainty is difficult accept

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A good evaluation, carefully planned and managed, can greatly assist policy makers in understanding the challenges posed by complexity, and Provide opportunities to anticipate and take steps to manage these challenges ✓

Challenges for evaluation

Complex system challenges	Evaluation challenges
Multiple interactions and influences	• Long, indirect causal chains linking inputs to impacts
Systems may be in continual change, or may resist change	• Objectives, design and data requirements may change over time • The programme may not be at a 'final state' when the evaluation comes to an end
Openness Context (and history) matters	• Hard to establish a clear boundary around the intervention • Difficult to standardise the intervention • Outcomes may vary from one context to another
Multiple perspectives	• Need data from multiple sources/informants
The nature of the change is unpredictable Multiple causality	• Evaluation plans may need to change to address emergence of unexpected features • New methods needed for causality and attribution
Complexity is difficult to communicate	• Difficulties in communicating methodology and findings

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Complexity is difficult to communicate	• Difficulties in communicating methodology and findings

None of these are new to evaluators – but greater complexity intensifies the challenge !

Challenges for evaluation commissioners

Complex system challenges	How to address in evaluation management
Multiple interactions and influences	• Ensure appropriate evaluation approaches used
Systems may be in continual change, or may resist change	• Agile management approach/regular review • 'Findings' projected forward using appropriate methods and reported with caveats
Openness Context (and history) matters	• Engage stakeholders with local knowledge • Evaluation approach (and data collection) must include context and history
Multiple perspectives	• Stakeholder involvement at all stages
The nature of the change is unpredictable Multiple causality	• Use experts in range of evaluation approaches • Wide range of different data sources needed to capture unpredicted features emerging
Complexity is difficult to communicate	• Ensure alignment of stakeholder understanding • Regular feedback during evaluation

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Be realistic about what can be achieved
Engage widely and take time to reflect,
Be prepared for change and uncertainty, and
respond agilely

Choosing an evaluation approach

※ Wide range of approaches available, but

※ No simple, mechanistic way of selecting the right one, and

※ Hybrid designs likely to be most useful
   - mix may change over course of the evaluation

※ Three key, interrelated considerations

Choosing an evaluation approach
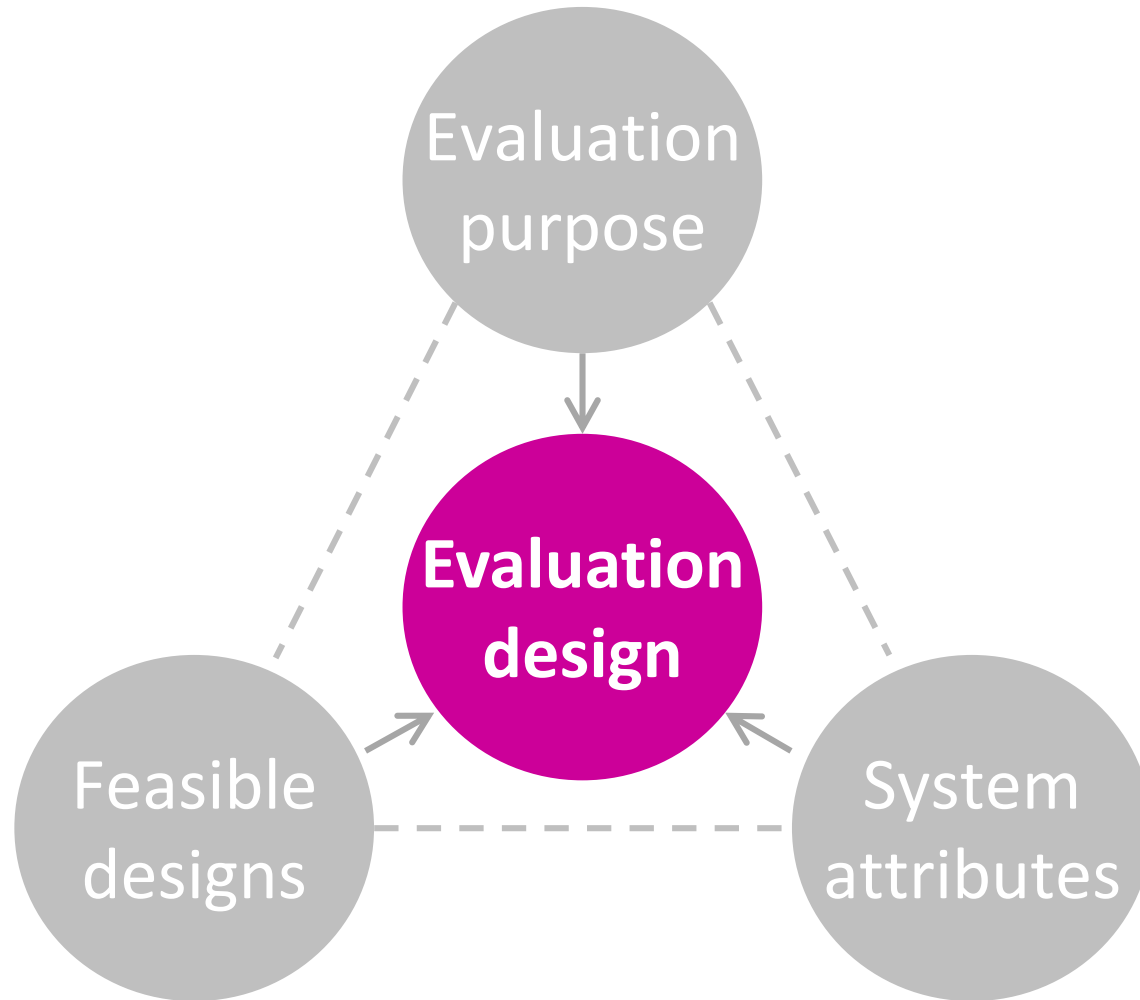
Useful questions: clarifying purpose

How will the findings be used?

Evaluation purpose

For Listening and Building:
- To ensure diverse voices are heard
- To build trust and legitimacy
- To generate champions for change?

t

For Learning:
- To build understanding
- To manage risk and uncertainty
- To improve this policy
- To improve similar policies?

For Accountability:
- To establish if the policy:
  … was implemented as intended …
- … is having the impacts anticipated …
- … is delivering value for money?

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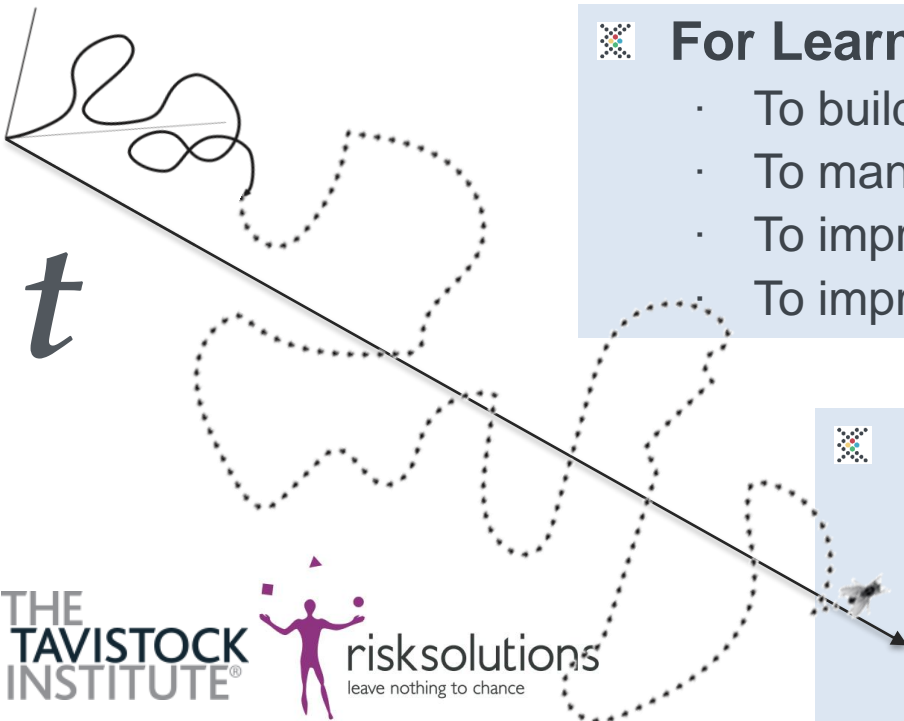
Useful questions: system attributes

Is there a good, common understanding of the system and its complexity - for example:

※ Is there a clear understanding of what influences outcomes and how:

- · Is there a clear direct relationship between your intervention and outcomes, OR
- · Do many factors influence outcomes in ways that are difficult to understand and predict
- · Have unanticipated outcomes occurred
- · Can you clearly define the scope of the evaluation?

System mapping

- · Are outcomes expected to differ depending on context

Realist approaches

※ Are view points aligned, OR

- · Are there multiple perspectives OR even
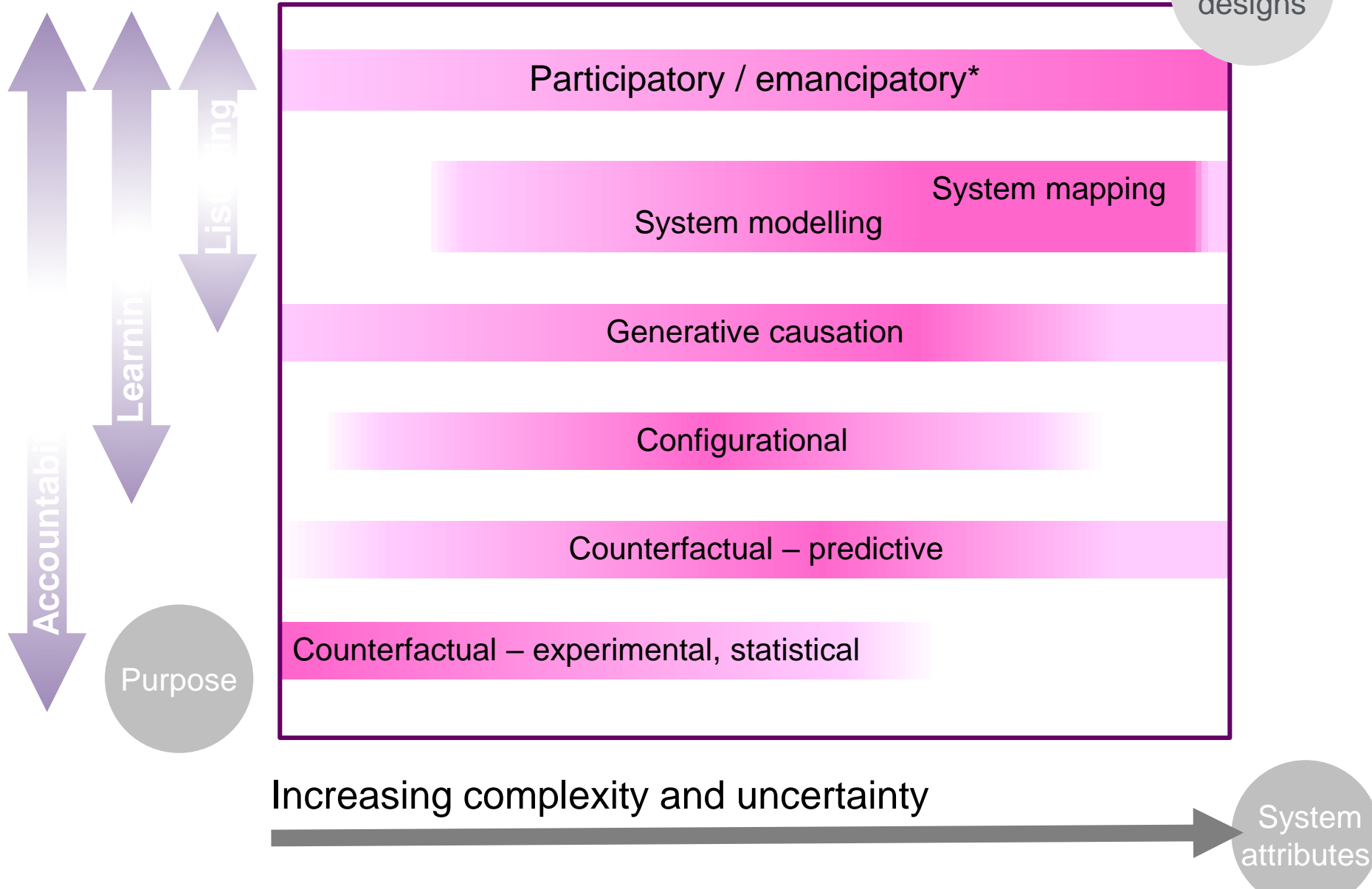- · Controversy

Participative approaches

Useful questions: feasible designs

※ Are the evaluation methods and approaches affordable and proportionate in terms of:

- · the expertise required

- · the data available or obtainable

- · the risks of getting the answer 'wrong'?

※ Has the trade off between the quantitative rigour of findings and accuracy been discussed:

- · reflecting the complexity and uncertainty present?

※ Are key stakeholders:

- · aware that the level of quantitative rigour and certainty of outcome may be limited, even using sophisticated evaluation methods

- · comfortable with the approach proposed?

Available evaluation approaches

candidate designs

Participatory / emancipatory*

System mapping

System modelling

Generative causation

Configurational

Counterfactual – predictive

Counterfactual – experimental, statistical

Listening

Learning

Accountability

Purpose

Increasing complexity and uncertainty

System attributes

Martha Bicket, University of Surrey
Ian Christie, University of Surrey
Nigel Gilbert, University of Surrey
Dione Hills, Tavistock Institute of Human Relations
Alex Penn, University of Surrey
Helen Wilkinson, Risk Solutions

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