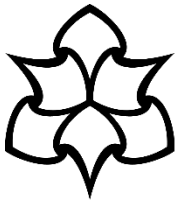


The importance of modelling purpose for policy

Bruce Edmonds
Centre for Policy Modelling
Manchester Metropolitan University

The different work a model does

- Models can do lots of *different* things – that is, the *work* the model does in the whole process that eventually informs policy
- A source of confusion between analysts and policy actors is due to a lack of clarity about what a particular model can do
- Not what just what one *hopes* it does, but what it can be *relied* upon to do by the policy actor
- In other words:
  Does what modellers do to develop and check a model make it reliable in this way – are their claims about the model justified?

In this talk I will…

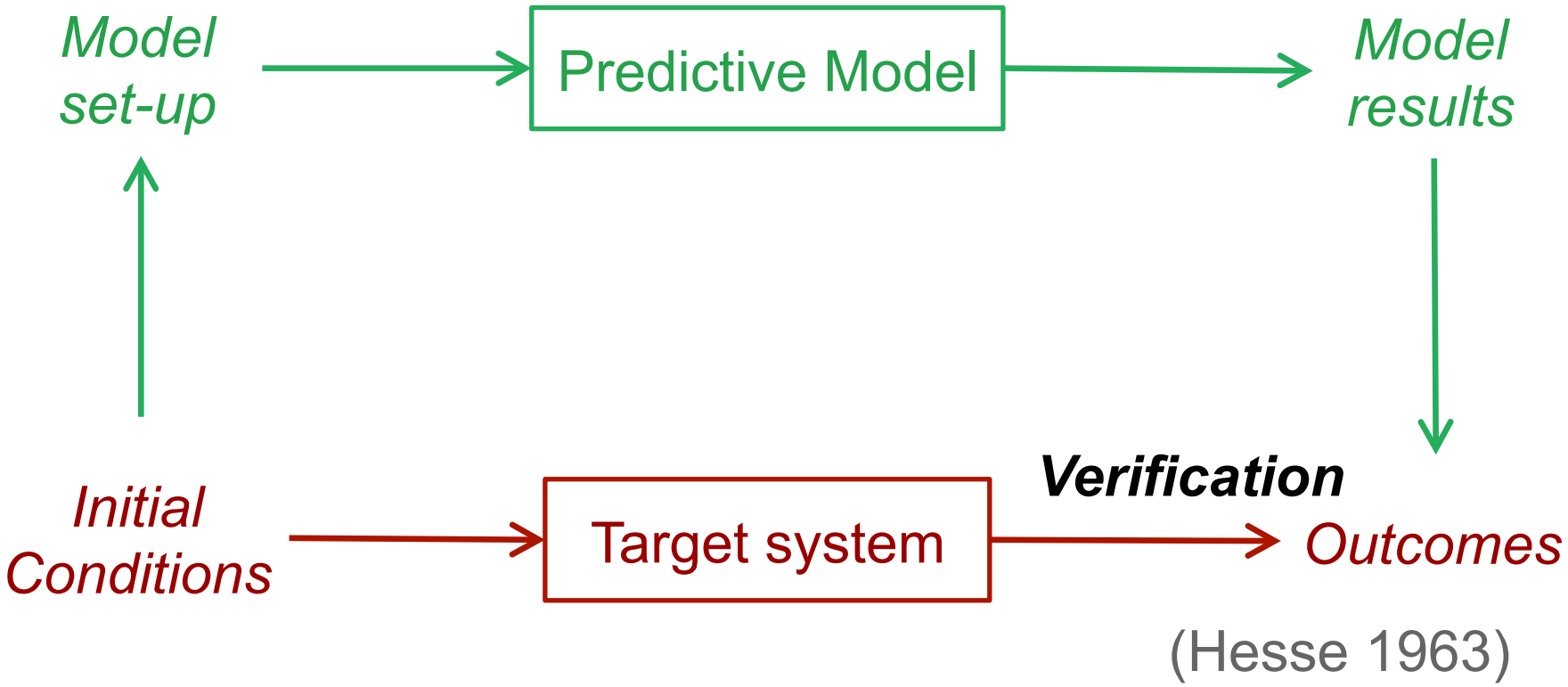
Distinguish ***some*** of the different kinds of use:

1. Forecasting/prediction
2. Scientific Explanation
3. Mapping theoretical consequences
4. Risk & Uncertainty Analysis
5. A way of thinking about things
6. As a tool for representing views/mediation

And briefly discuss some possible confusions

Forecasting/Prediction using a model

Reliably anticipating characteristics of a system in a useful way ***before*** *they are known*



(Hesse 1963)

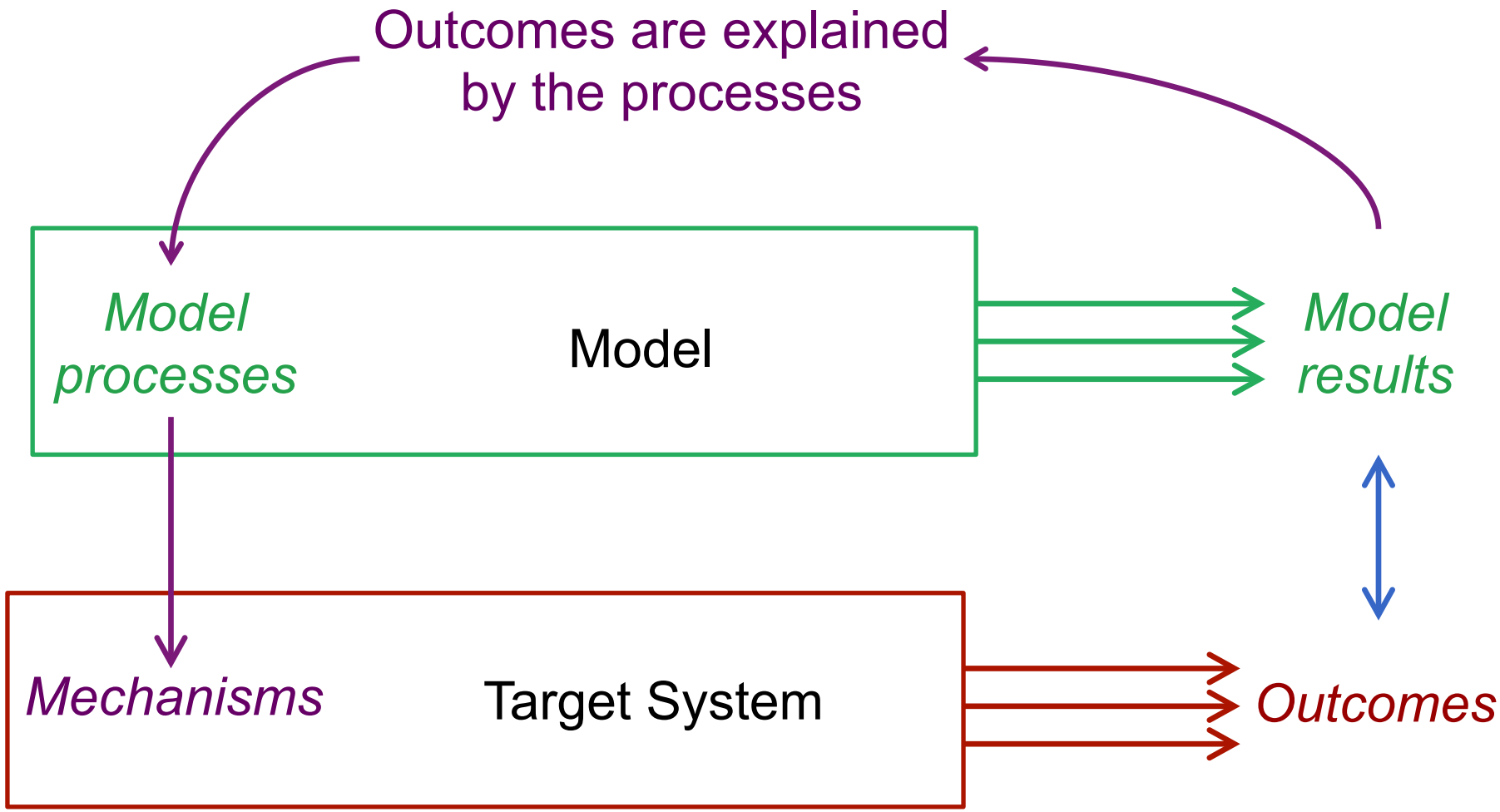
About Forecasting/Prediction

- Fitting *known* data does not count for this
- If you want to base a decision on policy *before* trying it you need prediction
- One should *only* claim prediction when one has a track record of success in this – otherwise it is just an aspiration
- Are the predictions any better than using a ruler on the recent data?
  (it has to be better than the null model)
- Are the conditions under which their predictions can be relied upon known?

Explanation

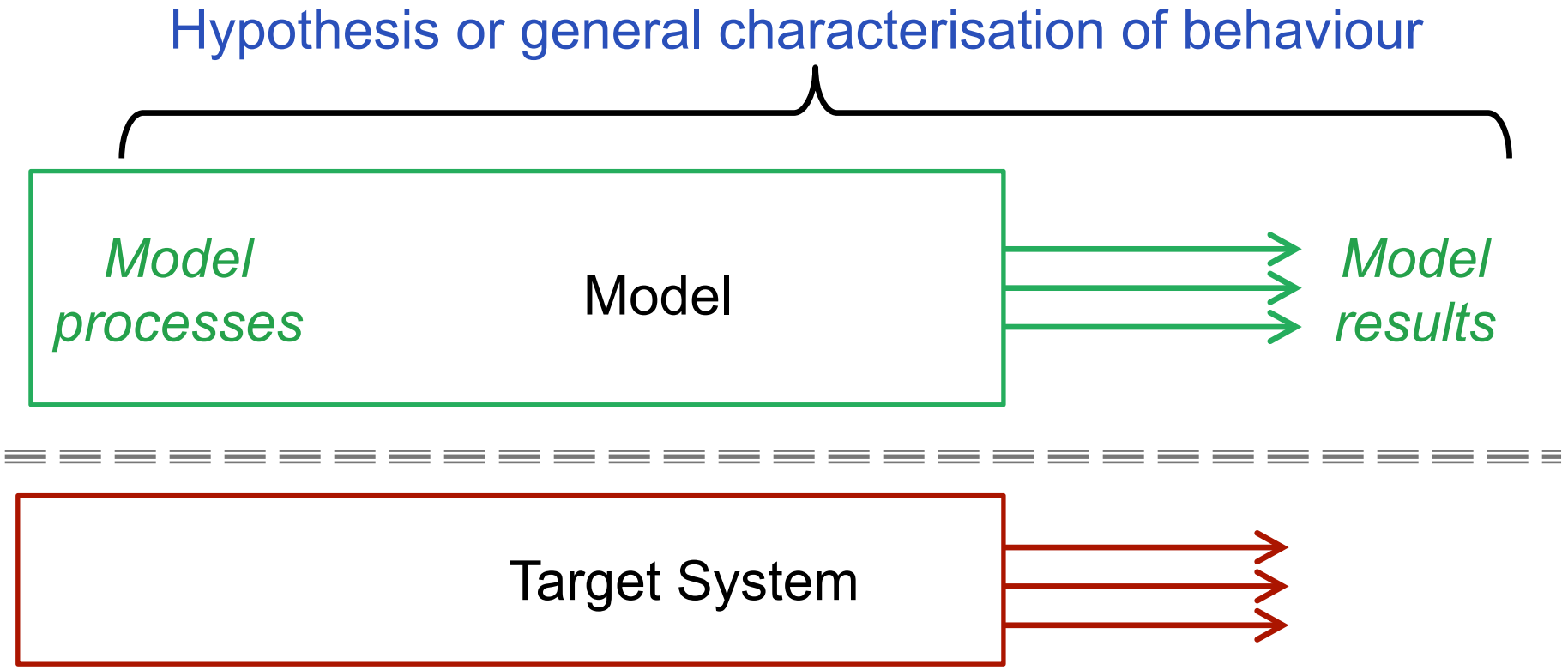
- This is when some *known* data sufficiently matches some model outcomes to support an explanation of those outcomes in terms of the model structures and processes
- This is what empirical science mostly does
- Useful for understanding what is happening, why it is happening and why then..
- …but using a *scientific* explanation
- Can inform policy actors but not make any decisions for them

Explanation using a model



Modelling to understand the consequences of some theory

When the consequences of some abstract structures, assumptions and processes are shown using a model

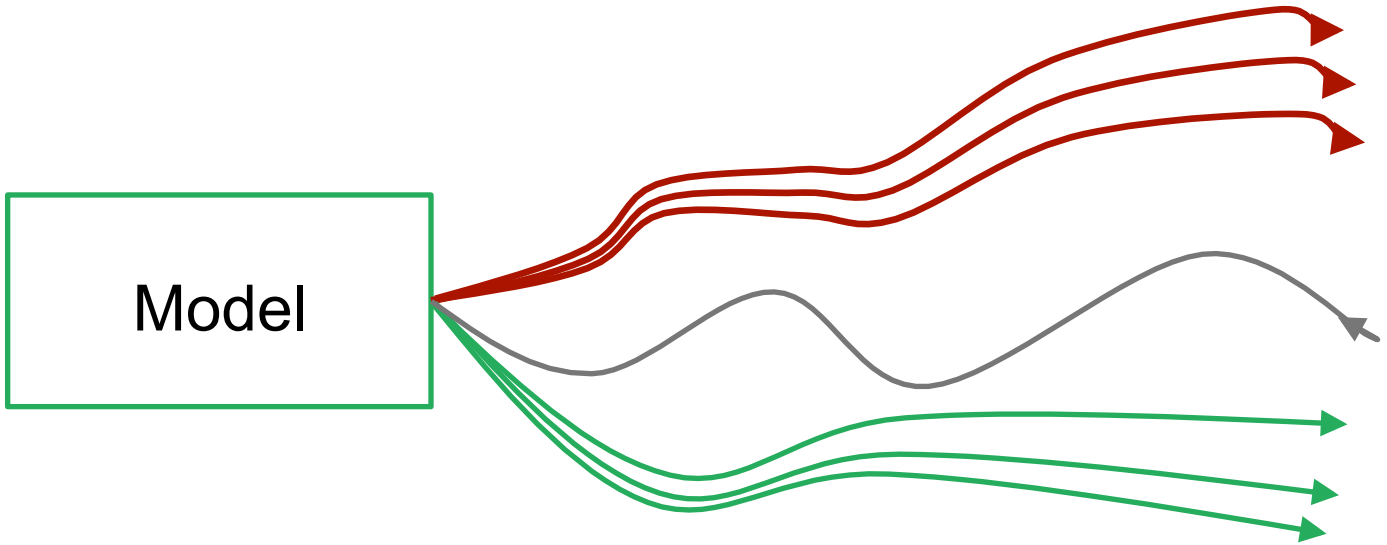


Exploring abstract mechanisms

- Though academics and analysts do this a lot, it is ***nothing*** *to do with reality…*
- …more the 'homework' analysts should do to understand their model
- Such models may have many potential uses but these need to be established
- Analysts have a tendency to see the world through their models (even with a complete lack of evidence) – hence very optimistic about a models potential for such uses

For risk/uncertainty analysis

Here the model is used to anticipate *some of the possible outcomes* from a situation, but not which of these are likely to occur



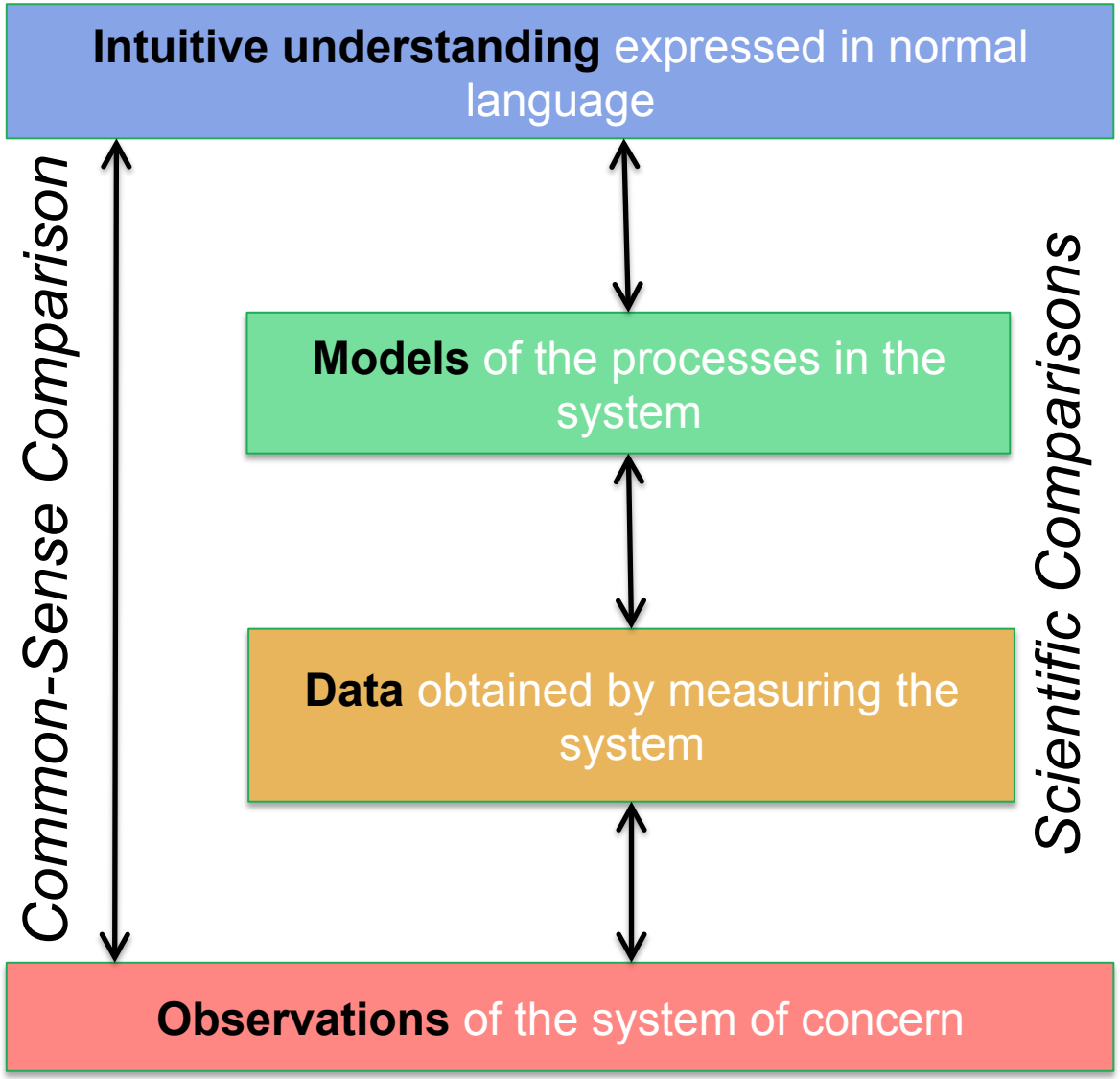
For risk/uncertainty analysis

- Here the model is used to suggest unexpected trajectories the real system could take (*different* from a risk/uncertainty analysis *of a model* for another purpose)
- Can help policy actors be prepared for how a policy could go surprisingly wrong and so guide monitoring and contingency planning
- Thus part of due diligence in policy making
- Can underpin narrative scenarios with formally understood processes

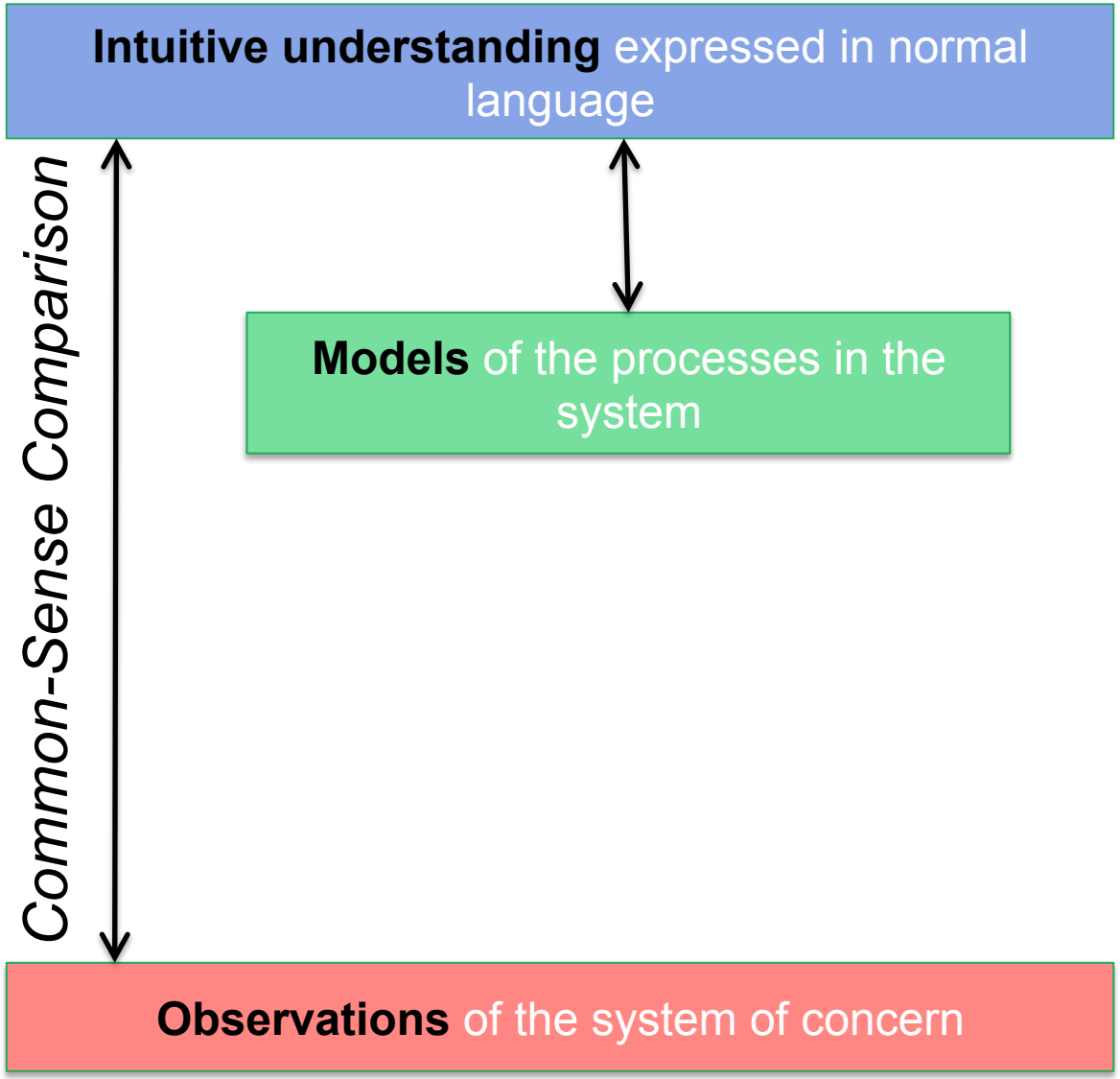
A way of thinking about things

- When the model is used as an analogy for something, a way of thinking about a system of situation…
- …but where there is no explicit empirical map from model to any data
- Useful for new insights or perspectives
- When involved in the building a model it is common to see the world using the model, but this is an illusion

Empirical modelling

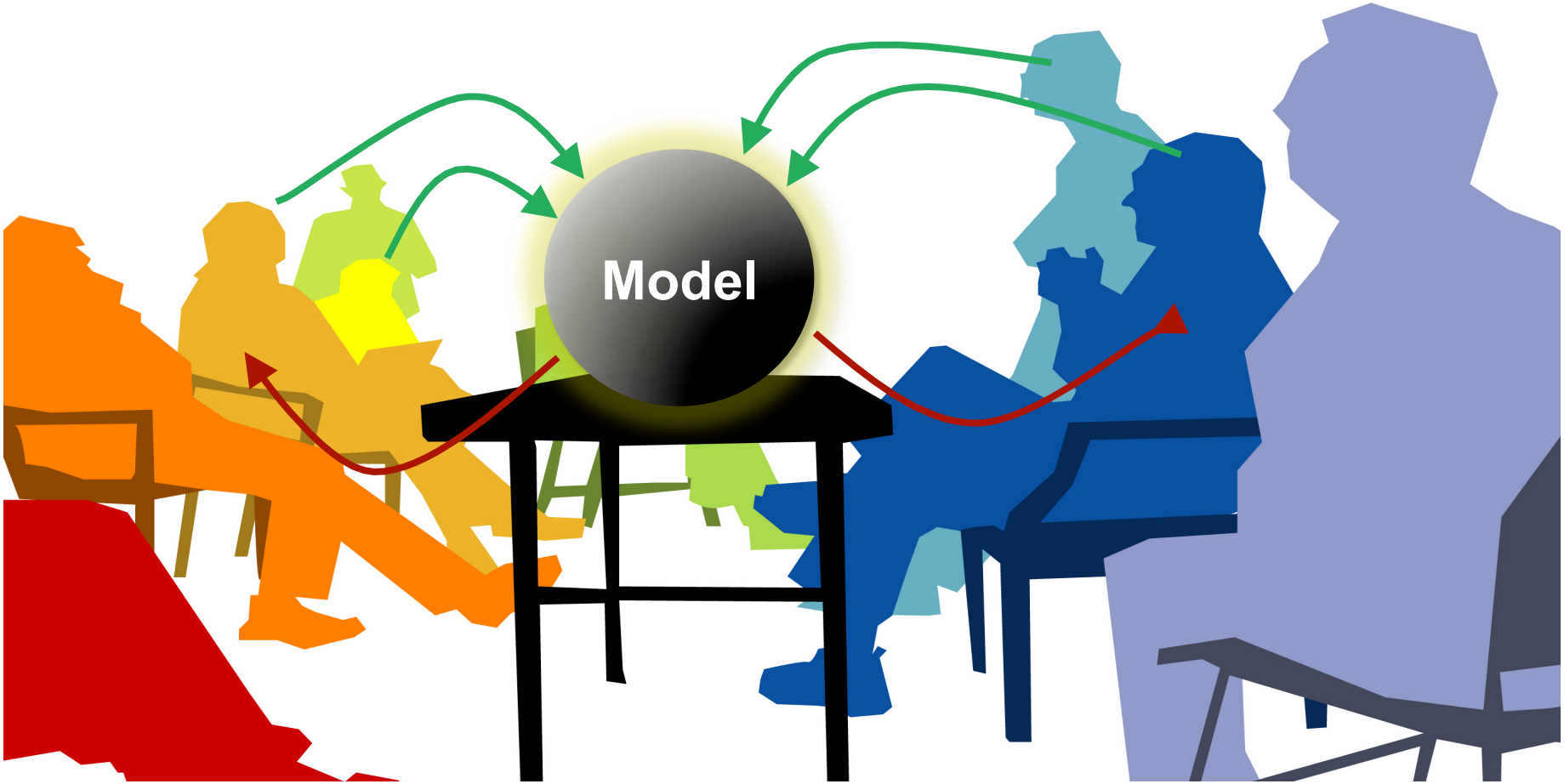


Model as an Analogy



Using models for mediation

This is when some people's views of the world are captured/discussed via a model



As a mediation tool

- Maybe through an extensive process of expert/stakeholder discussion and input (e.g. group modelling)
- Being part of such a process is very convincing – one thinks the model is true!
- This is suggestive of a model for another purpose, but can only be relied on for one of these when tested for its ability to do it

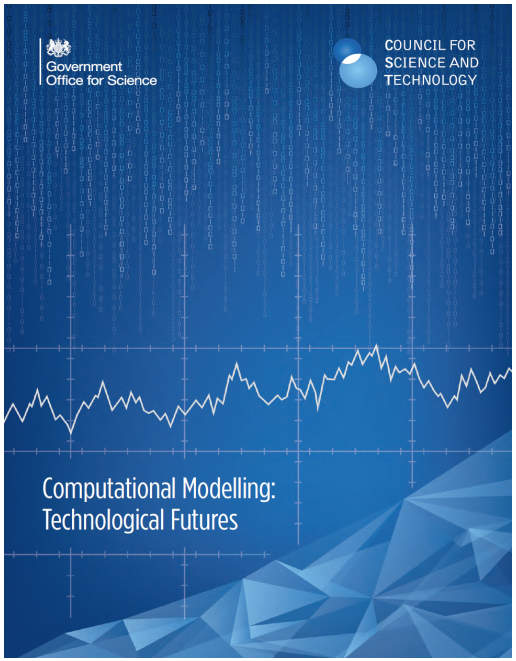
Some common confusions

- **Theory → Analogy**
  Exploring theory tends to suggest a way of thinking about the world even if its bad
- **Analogy → Explanation**
  Thinking about the world does not mean that you can empirically explain it
- **Explanation → Prediction**
  Just because you can explain something with empirical support does not mean you can reliably predict anything useful about it

Analyst↔Policy Tension

- Policy actors often ask analysts to do prediction when this is not feasible (when ***even*** 'rough' prediction is not feasible)
- For various reasons, analysts are not clear about what their model can do, that is…
- they *obscure what it can be relied upon for*
- This is often not deliberate, but due to a combination of unrealist demands and insufficient time/resources to meet these
- The result is unsatisfactory policy support

References



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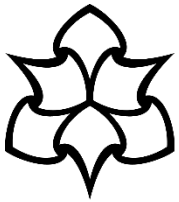

Thanks!

Bruce Edmonds: bruce@edmonds.name

Centre for Policy Modelling: http://cfpm.org

These slides are available at:
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