Evaluating Complex Social Interventions in a Complex World: The Energy Issue Context.

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Evaluation

- **The action of evaluating or determining the value of (a mathematical expression, a physical quantity, etc.), or of estimating the force of (probabilities, evidence, etc.). Oxford English Dictionary Online**

This is expanded in a discussion exactly of 'Evaluation Research' to cover: 'evaluations of social programmes aimed at discovering whether these programmes have worked or not'.

What works?

- What has worked?
- How has it worked?
  - What causal mechanisms have operated?
- Where has it worked?
- When has it worked?
- Can it work elsewhere?
- Can it work elsewhen?

Evaluation in Energy Policies: Tell me if I am wrong.

- What follows is based on a quick and dirty literature search.
- Most evaluation of energy policies has been conducted in terms of grading the policies against pre-established criteria.
- There are a limited number of case study based evaluations.
- Some, but not many of these, have looked at multiple cases.
- Even these have not engaged in systematic cross case comparison in an explicit fashion (although the logic of inquiry has often been this in an implicit fashion).

The Problems

- Emergence – the whole is greater than the sum of its parts – superposition fails – analysis is useless.
- Context
  - Circumstances alter cases
  - Path dependency: if you wanted to get there you can't start from here.
- Agency
- Process – what happened and especially what happened when and in what order – sequencing.

The Problem of Emergence in addressing Complex Social Systems

Emergence in Complex Social Systems is in considerable part a product of human agency

Multiple levels of intersecting complex systems matter

- The Global context – international agency.
- National levels in relation to policy and governance – national agency.
- Meso level sub-national governance when this has agency – e.g. Scotland in the UK.
- The agency of institutions and actors within them.
- The agency of households based on the action of individuals within them.

In all of these levels agency is often based on social practices

- We have used other terms for this and even when we have dealt in terms of rationality we have accommodated 'satisficing' (after Herbert Simon) as an alternative to strict optimizing.

- Even satisficing implies rational calculation but should it?

- What we are interested in is changing behaviour.

What are we dealing with?

- Complex systems are "CASES".
- This means that we have to 'case them' as Ragin (1992) puts it.
- We also have to define the population of cases our cases belong to.
- Both these processes form part of necessary full operationalization.
- Compare with Cilliers (2001) on what we mean by boundaries of complex systems.
- Compare with DeLanda's (2006) commentary on Deleuze in relation to "territorializing".
- We do this for our purposes but – the realist bit – reality has a voice as well.

Comparison – the practice of hunting causes through exploring differences

- Ensembles of Systems.
- Near Neighbours.
- Path Dependency.
- The method of differences.
- Set-theoretic relationships rather than variable based causality.
- Process Tracing
- Systematic Comparison

Some Names at this point

- Archer, M. S. (2011) 'Morphogenesis: realism's explanatory framework' in *Sociological realism*, Editors: Maccarini, A. M., Morandi, E. and Prandini, R., Routledge, Oxford

- Pawson, R. and Tilley, N. (1997) *Realistic Evaluation* London: Sage

- Mechanism@context=>Outcome

- PAUL CILLIERS Boundaries, Hierarchies and Networks in Complex Systems *International Journal of Innovation Management*, Vol. 5, No. 2 (June 2001) pp. 135–147 © Imperial College Press

The importance of process

- Process $\equiv$ Trajectory,

  (Process is equivalent to Trajectory when trajectory is fully described)
- Process Tracing $\equiv$ history making

  (Process Tracing involves constructing histories)
- Ensembles of systems $\equiv$ Categories $\equiv$ Clusters

  (Ensembles of systems are equivalent to categories and can be described in terms of clusters)
- We can describe systems in terms of the kind of things they are.
- We can describe changes in systems in terms of changes in the kinds of things they are.
- When we look for explanations of why systems change, we have to look to what happened over time, to process /

Process Tracing

' .... process tracing is a methodology well suited to testing theories in a world marked by multiple interaction effects, where it is difficult to explain outcomes in terms of two or three independent variables – precisely the world that more and more social scientists thing we confront.'

George and Bennett *Case Studies and Theory Development in the Social Sciences* 2005 206 quoting Hall quoting George.

Hunting causes by way of differences

'Where there is a difference in the effect there is a difference in the cause.'

Maclver's Axiom 2 (*Social Causation* 1942 26)

Complex causation - configuration

'For causation, the main contrast is between the conventional view of causation as a contest between individual variables to explain variation in an outcome and the diversity-oriented view that causation is both conjunctural and multiple. In the conventional view, each single causal condition, conceived as an analytically distinct variable, has an independent impact on the outcome. In the diversity-oriented view, causes combine in different and sometimes contradictory ways to produce the same outcome, revealing different paths.' (Ragin 2000 15)

Systemic comparison

' … policy researchers, especially those concerned with social as opposed to economic policy, are often more interested in different kinds of cases and their different fates than they are in the extent of the net causal effect of a variable across a large encompassing population of observations. After all, a common goal of social policy is to make decisive interventions, not to move average levels or rates up or down by some miniscule fraction.' (Rihoux and Ragin 2004 18)

Configurational Complexity

If … we live in a world of great causal complexity, then a common pattern will be for outcomes to result from different combinations of causal conditions.
(C.C.Ragin Fuzzy Set Social Science 2000 103)

An Example – English Secondary Schools

- These are cases about which we have both measures and descriptions
- The measures are Numbers.
  - Some of the Numbers are continuous measures.
  - Some of the Numbers are categorical specifications.
- Our descriptions take the form of texts.
- The texts are available as online reports

Using NVIVO with Our Cases

With Measures

1. Categorical Measures can be entered directly as attributes.

2. Continuous Measures can:

   <u>Either</u> be banded into ordinal values and entered as attributes.

   <u>Or</u> we can cluster using continuous measures for appropriate variable sets e.g. performance as a set, social background as a set.

With Textual Materials

1. We can read through our texts to establish new attributes 'in vivo'.

2. We can code these new attributes as text attributes to our case nodes.

Textual Data Sources

Ofsted Reports – available online and can be downloaded as text documents.

Ofsted reports are reports of an inspection. They include descriptive accounts of the school across a range of parameters and specification of performance in relation to objectives. There is a good deal of descriptive text which takes essentially the same form as an ethnographic report.

Procedure in NVIVO

- Create a set of case nodes corresponding to cases.

- Create or import attribute table based on existing measurements.

- Work through an interpretive process which establishes new attributes and varies existing attributes.

- Construct final attribute table.

- Export in .dat form.

An Example – English Secondary Schools – Pre-existing attributes

Continuous Variables
1. School Performance
2. Truancy Rates
3. Size information
4. Special Needs
5. Free School Meals

Categorical Variables

1. School Type
2. Gender
3. Selective or not
4. Catchment area type (can be ordinal)

More References

Byrne, D.S. and Callaghan, G. (2013) *Complexity Theory and the Social Sciences: the state of the art* London: Routledge

Callaghan, G. (2008) 'Evaluation and Negotiated Order' *Evaluation* 14 4 399-411

McIver, R.M. (1942) *Social Causation* New York: Ginn and Company

Ragin, C. (1992) 'Casing and the Process of Social Inquiry' in Becker and Ragin (Eds) *What is a Case?* Cambridge: Cambridge University Press217-226

Ragin, C. (2000) *Fuzzy Set Social Science* Chicago: University of Chicago Press

Ragin, C. & B. Rihoux (2004) 'Qualitative Comparative Analysis (QCA): State of the Art and Prospects' *Qualitative Methods. Newsletter of the American Political Science Association Organized Section on Qualitative Methods*, 2 2 3-13