

Evaluation Methodologies for Aid-financed Development Interventions: Some Approaches to Complexity

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Outline of talk

- **The world really is complex**
- **Complexity and development**
- **Complexity science**
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- **Complexity social science and policy**
- **Complexity social science and aid evaluation**
- **The political economy of aid evaluation**
- **Aid evaluations**
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The world really is complex

- **‘The story of the universe is one of unfolding complexity’**
- **‘Energy and chemical elements produced by the stars have led to the emergence of intricate structures as organised as crystals and human brains’**
- **‘Life is an emergent property which arises when physico-chemical systems are organised and interact in particular ways’**
- **A city is an emergent property of millions of human beings**

Complexity and development

- A very good source:

B. Ramalingam and H Jones *et al*

‘Exploring the science of complexity: ideas and implications for development and humanitarian efforts.’

ODI Working Paper 285.

2008

Complexity science

- **Parallel and interactive progress in maths, physics, chemistry and biology underpin the development of ‘complexity science’**
- **This progress depended on advances in computer technology**
- **Complexity science has been defined as ‘the study of the behaviour of macroscopic collections of simple units (e.g. atoms, molecules, bits, neurons) that are endowed with the potential to evolve in time**
- **Current main focus is Complex Adaptive Systems (Santa Fe) and Open Dissipative Systems (Prigoginist)**

Complexity science

- **Complex adaptive systems/open dissipative systems**
 - Far from equilibrium
 - Use and dissipate energy from the environment to stay far from equilibrium
 - Take in, use and store information about the environment
 - Changes in internal states occur in response to the environment – can adapt structure when necessary
 - Changes in system behaviour are not linearly related to changes in environment

Complexity science

- **Internal relationships – non-linearity**
 - **Parts are related, inter-dependent and interact**
 - **Emergence - the whole is not the sum of the parts**
 - **Inter-connected and inter-related elements, dimensions and levels**
 - **Degrees of connectivity vary across systems affecting overall resilience / adaptability to external changes**
 - **Degrees of connectivity vary across different system areas and levels affecting the intensity of feedback processes**

Complexity science

- **System trajectories – non-linearity**
 - Evolution – changes in kind resulting from changes in the environment including competition with other systems
 - History matters – path dependence
 - Different types of system have different durations
 - Negative and positive feedback processes
 - Phase space – the space of the possible
 - Attractors – predictable or chaotic/strange
 - Adaptive agents
 - Self-organisation
 - Co-evolution
 - Degrees of connectivity can vary through time

Complexity theory

- **Ideas about complexity have not only been developed in the sciences**
- **For example:**
 - **Philosophers have described language in terms of a complex but robust system (Cilliers, 1998)**
 - **Social theorists have taken a view on complexity theory (Smith and Jenks, 2006)**
 - **Social policy experts have used ideas from complexity science metaphorically to inform innovative methodological approaches to urban social problems (Byrne, 1997)**

Complexity social science

- **Inter-penetrating complex systems**
 - Multi-level
 - e.g. global – macro – meso - micro
- **System elements and relationships**
 - Structurally embedded heterogeneous *creative* agents with interests
 - Organised in unequally structured sub-systems e.g. households, communities, kingroups, enterprises, NGOs, political parties, transnational companies, donor groups..
- **System structures and dimensions**
 - Unequal role, relationship and resource structures
 - Varying connectivity
 - Material, technological, social, economic, political and cultural dimensions

Complexity social science

- **Social system trajectories**

‘Social systems are not fixed and unchanging, even when they are relatively stable. However, much of the time the changes are bounded – things change over time but the systems’ essential character is not changed.’ Byrne, 2002

- **Multiple perspectives on social systems**

‘Interpretations are contingent and provisional, pertaining to a certain context and a certain time-frame.’ Cilliers, 1997

‘More than one description of a complex system is possible. Different descriptions will decompose the system in different ways’ Cilliers, 2005

Complexity social science and policy

- **Making things work better**

‘Complexity is essentially a frame of reference - a way of understanding what things are like, how they work, and how they might be made to work.’ Byrne, 2002

- **Integrating qualitative and quantitative work**

‘The approach has as much relevance in qualitative and historical work as it has in quantitative modelling, although one of the things it pushes us towards is the collapsing of the false boundaries between quantitative and qualitative work.’ Byrne, 2002

- **Endogeneity and reflexivity**

Policy design and evaluation should be treated as an integral part of complex policymaking and implementation systems

Complexity social science and policy

- **An appropriate methodology:**

..(P)olicy research seeks to discover ameliorative solutions to social problems in which small changes in the initial conditions of the life course of a person, a community, or an institution will produce great changes in the final outcome. Harvey, 2002

..social interventions are complex systems thrust amidst complex systems' Pawson *et al* 2004

- **Recognises political choices**

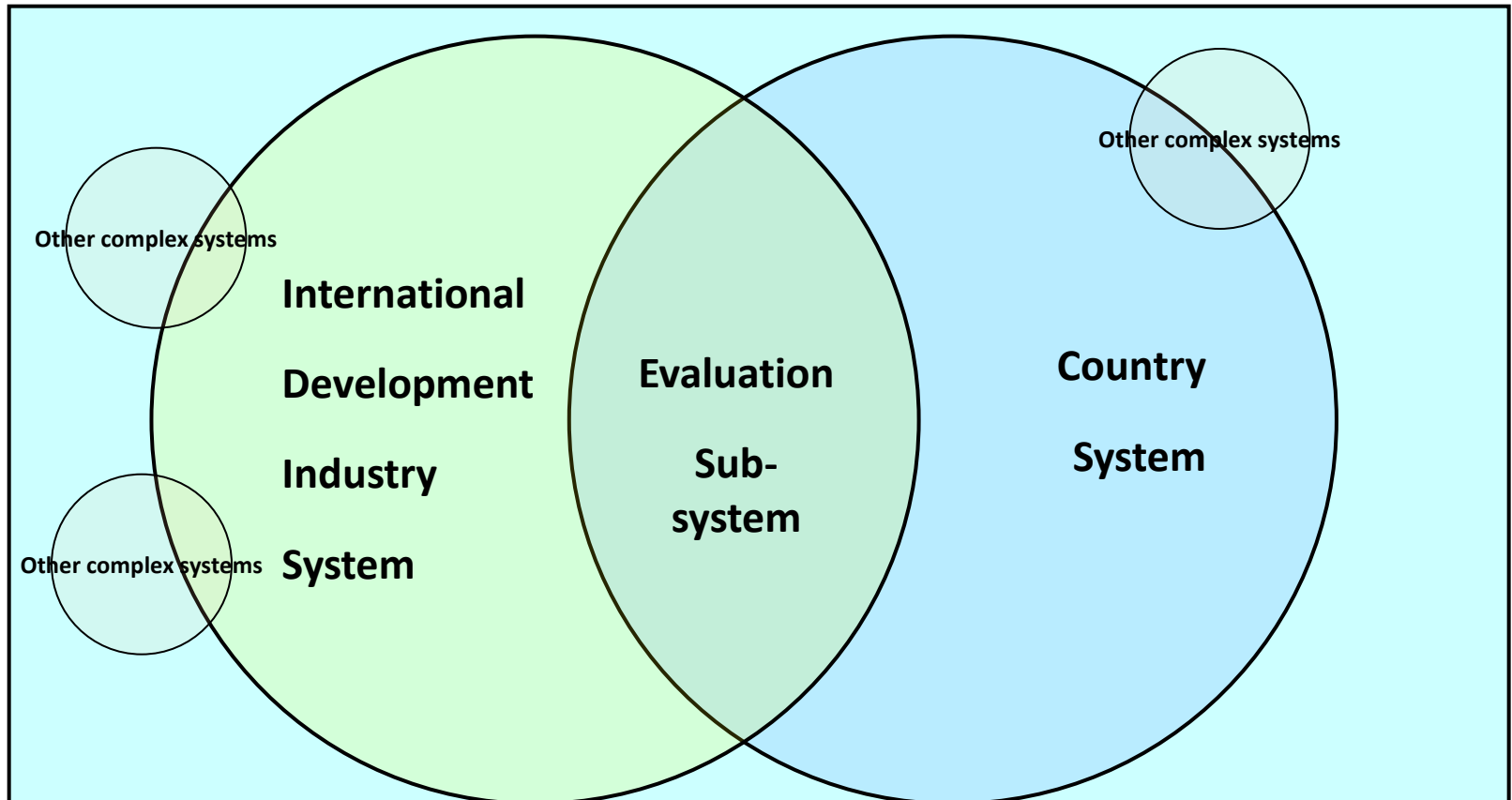
'...no universal optimization principle for complex systems... many futures are possible... they differ from each other qualitatively' Prigogine, 1997

- **Against 'one size fits all'**

The best course of action will be context-dependent

Complexity social science and aid evaluation

- Two inter-penetrating systems: IDIS and CS
- Two IDIS inter-penetrating sub-systems: clients and evaluators



The political economy of evaluation

- Evaluators are go-betweens operating in two interpenetrating open complex systems
- Quote from an ODI/ALNAP powerpoint presentation by David Booth and John Mitchell
 - In all public policy areas, the relationship between politicians and evaluation professionals is fraught
 - In aid, there are additional complications
- More on that from James Morton [\[Seminar 1\]](#)

Aid evaluations

- In recent years pressure has grown on donors to demonstrate the effectiveness of publicly funded aid initiatives
- Some years ago OECD DAC identified the following key evaluation criteria
 - Relevance
 - Effectiveness
 - Efficiency
 - Sustainability
 - Impact
- These were used in the long-term evaluations of Danish aid [Seminar 2]

Aid evaluations

- **Currently there is a focus on ‘impact’ – the relation between the aid intervention and ‘outcomes’**
- **OECD DAC Development Evaluation Network**
 - **Impact = positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended**
 - **Impact evaluation design should reflect the characteristics of the interventions being evaluated, and the specific context of each evaluation**
 - **Necessary to engage different stakeholder perspectives in defining, monitoring and evaluating impacts**

Aid evaluations

- This has led to the development of methodologies for:
 - Identifying the extent and cost effectiveness of the impact of interventions by measuring and relating inputs and outcomes using experimental or statistical methods – the **'black box approach'**
 - Testing the theory behind the intervention in particular contexts and examining the role of other influencing factors to build a reasonably credible case about the difference an intervention made or is making – **'contribution analysis'**
 - Testing the theory behind the intervention in particular contexts and identifying ways of refining it so it will work better – the **'theory-based approach'**

Aid evaluations

- **Black box – e.g. World Bank economics approach to impact evaluation**
 - **What would have happened had the intervention not existed?**
 - **report mean difference in outcomes between treated and untreated groups (Random Controlled Trial approach – RCT)**
 - **The optimum strategy is experimental/randomised but quasi-experimental and non-experimental approaches drawing on existing data sources are also useful**

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTISPMA/0,,contentMDK:20188242~menuPK:412148~pagePK:148956~piPK:216618~theSitePK:384329,00.html>

- **Methodology used as one input to evaluations of sector programmes for water (Tanzania, Yemen) and education (Uganda, Zambia) by IOB (Policy and Operations Dept of the Netherlands Ministry of Foreign Affairs) [Seminar 2]**

Aid evaluations

- **Theory-based [Seminar 1] – e.g. Evaluation of Fast Track Initiative**
 - **Theoretical basis for the analysis – Results Chain**
 - **In each country the results chain will be elaborated and disaggregated in order to examine subsets of influences**
 - **Linked to identified data sources and indicators to provide a common instrument**
 - **‘One of the strengths of this approach is that it allows for the possibility of different effects in different countries; it will highlight cases where evaluators need to explain why things work differently in different contexts.’**

Aid evaluations

- **Contribution analysis – e.g. AusAID Fiji Education Sector**
 - **Recognition that it takes time for results to occur and no attempt to prove an impact before impacts can be realistically achieved.**
 - **‘Rather than attempt to definitively link a programme’s contribution to desired results, contribution analysis alternatively seeks to provide plausible evidence that can reduce uncertainty regarding the ‘difference’ a programme is making to observed outcomes.’**
 - **Use formal data sets, literature reviews, case studies, field visits, interviews with stakeholders and experts knowledgeable about the programme area**

Aid evaluations

- **The definition of ‘outcomes’:**
 - In RCT- style interventions and evaluations donor defines outcomes
 - Theory-based evaluations – initial definition of outcomes by donor – though if broad stakeholder analysis is included other outcomes may be identified
- **There are also less-widely used methodologies which look beyond the theoretical impact of one intervention, e.g.**
 - Establishing local judgments of the value of the intervention in the light of overall local needs
 - Case-based statistical methods to identify different types of response to interventions associated with different contexts **[Seminar 2]**

Aid evaluations

- **Participatory approaches and methods**
 - See e.g. Robert Chambers ‘So that the Poor Count More: Using Participatory Methods for Impact Evaluation’ In 31e Working Paper 4
- **Longitudinal community-level protocol research**
 - Longitudinal case-based M & E of real changes at community and household levels for poverty monitoring [Seminar 1]
 - Long-term perspectives on development impacts at community level (upcoming Mokoro assignment)

The two-day seminar programme

- **Evaluations of budget support and sector programmes theory-based approaches and contribution analysis (involving Mokoro):**
 - General budget support (GBS)
 - Sector programmes (SBS)
 - Education (FTI)
- Long-term impact evaluations of sector programmes using mixed methods including quasi-experimental statistical analyses (IOB)
- Long-term evaluation of one donor's aid programme in one country (Mokoro)
- Meta analysis of a number of such evaluations (Mokoro)
- **Longitudinal case-based M & E at community level (Mokoro)**
- Long-term perspectives on development impacts at community level (Mokoro)
- **An evaluation of the impact of evaluations**