METHODS LAB

May 2016

WHEN THEORY MEETS REALITY

ASSUMPTIONS, FEASIBILITY AND IMPLICATIONS OF A COMPLEXITY-INFORMED APPROACH

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KEY MESSAGES

- Over the last half century, repeated calls for adaptive learning in development suggests two things: many practitioners are working in complex situations that may benefit from flexible approaches, and such approaches can be difficult to apply in practice.
- Complexity thinking can offer useful recommendations on how to take advantage of distributed capacities, joint interpretation of problems and learning through experimentation in complex development programmes.
- However, these recommendations rely on underlying assumptions about relationships, power and flexibility that may not hold true in practice, particularly for programmes operating in a risk averse, results-driven environment.
- This paper poses guiding questions to assess the fit and feasibility of integrating complexity-informed practices into development programmes.

A METHODS LAB PUBLICATION

ODI.ORG/METHODSLAB

The Methods Lab is an action-learning collaboration between the Overseas Development Institute (ODI), BetterEvaluation (BE) and the Australian Department of Foreign Affairs and Trade (DFAT). The Methods Lab seeks to develop, test, and institutionalise flexible approaches to impact evaluations. It focuses on interventions which are harder to evaluate because of their diversity and complexity or where traditional impact evaluation approaches may not be feasible or appropriate, with the broader aim of identifying lessons with wider application potential.

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Acronyms

ODI	Overseas Development Institute
RAPID	Research and Policy in Development Programme
USAID	United States Agency for International Development

1. Introduction

The Methods Lab seeks to develop, test and institutionalise approaches to evaluation, with a focus on complicated and complex development programmes and implementing environments. These programmes, and others in which the Overseas Development Institute (ODI) has been involved, are large, multi-component initiatives, involving multiple organisations and implementation sites, and often operating in unpredictable political, economic or environmental contexts. As such, complexity thinking offers potentially relevant insight into some of the struggles these types of programmes face.

This paper aims to increase the relevance and practical usefulness of complexity thinking for practitioners who are responsible for designing, managing and evaluating large programmes with complex elements. This could include programme managers overseeing large initiatives, donor officers designing and administering programmes, and monitoring, evaluation and learning advisors. Some of the challenges of working in large programmes with complex elements have implications for, but are not limited specifically to, evaluation and learning so the paper does not restrict its focus to evaluation alone.

The paper is written from the perspective that complexity thinking has relevant insights to offer, but that these are underused and can be difficult to operationalise within and across organisations operating in risk averse, results-driven environments. All programmes face constraints that bound their 'room to manoeuver' as complex endeavours. This paper explores options within this space and aims to help development managers identify where aspects of complexity thinking may be most useful. It therefore assumes an incremental, rather than absolutist, approach: that some recommendations from complexity thinking may be able to be incorporated into existing systems that are not currently suited towards a fully flexible, adaptive style.

The paper explores options for development managers once they have identified that there are some complex elements of their work. Under what circumstances and in what ways can complexity thinking be incorporated into decision-making and management processes? Where are there pockets of potential for development programmes to apply this lens in practice? What are the implications of complexity thinking for organisational structures, and evaluation and learning processes?

Structured in three parts, this paper first provides a brief overview of the discourse on complexity in international development and key features of complex programmes. It then presents recommendations from complexity scholars and identifies underlying assumptions and challenges based on examples drawn from current programmes. Finally, the paper poses guiding questions to help assess the fit and the feasibility for a programme of adopting these recommendations, and what practical steps and processes can help facilitate their integration.

Box 1: What is complexity thinking?

There is a significant body of scholarly work on different dimensions and interpretations of complexity in development. 'Complexity thinking' is used here as an overarching term to describe the broad range of literature and approaches on applying complexity theory to development programmes. Section 2 deals with features of complex programmes in more detail (p.6) and Box 2 provides guidance for programmes in diagnosing the extent to which different programme elements are complex (p.7).

2. Features of complex programmes

Complexity thinking is not new: Hall and Clark (2010) and Mowles (2014) trace its roots to the early 20th century. However, discourse on complexity in the development field has burgeoned in recent years. Previous work has considered different dimensions of complexity, and has identified potential insights and broad recommendations for analysis, planning, strategy development, management, implementation and evaluation (Mowles et al. 2008; Rogers 2011; Hummelbrunner and Jones 2013a, 2013b; Mowles 2014; Copestake 2014; Matthews 2015; Root et al. 2015).

While scholars have characterised complexity in various ways, many identify similar features. Woolcock (2013), for example, uses the term 'causal density' to reflect the extent to which an intervention or its elements are complex, based on the intensity of transactions among individuals; level of discretion of implementation staff; pressure to do something other than implement a solution; and the existence of known solutions. Hall and Clark (2010) characterise complex, adaptive systems as interacting elements that behave as a whole, with increasingly numerous interactions, which cannot be understood solely by analysis of their component parts but are strongly influenced by the spatial patterns of them, and as evolutionary, not returning to states of equilibrium. Others have focused on the sensitivity to initial conditions (making findings difficult to translate to new contexts), and the interplay between elements of complex adaptive systems (Eoyang and Berkas 1998). Rogers (2011) explores the implications of distinguishing between what is complicated (multiple components, needing expertise) and what is complex (emergent, patterns only evident in retrospect), drawing on the work of Glouberman and Zimmerman (2002) and Kurz and Snowden (2003).

Some scholars have been critical of both the over-use of the term and under-application of complexity sciences (Stern 2008; Mowles 2014; Patton 2015). But, whether enthusiastic or critical, the heightened focus on complexity in recent years reflects a resonance with the situations and challenges that development practitioners and evaluators face. This increased attention paid to complexity risks misunderstanding and misapplication of the term.

One particularly common misunderstanding is categorical reference to a programme as 'complex' in its entirety; some aspects of a programme may be complex but it may not be uniformly so. Yin (2013) and Woolcock (2013), among others, note the importance of distinguishing complex from simple and complicated *elements* of development programmes.

For example, a programme may: feature a *complex theory of change* with multi-directional, unpredictable change pathways; intended to address a *complex issue* like women's economic and social empowerment; through a fairly *straightforward, discrete intervention* of business and negotiation skills training and provision of supplies; implemented through a *complicated, multi-site, multi-layered organisational structure* with established decision-making hierarchies; operating in a *complex context* where access to markets is unpredictable as a result of weather and security risks. This paper returns to this illustrative example in its fourth section to discuss the fit and feasibility of different complexity recommendations in greater depth.

Building on previous ODI work, this paper focuses on three particular components of complexity characterised by Ramalingam et al. (2008) and Jones (2011):

1. *Distributed capacities* – when skills, resources and actions are dispersed across many actors, institutions and geographies, whose joint interaction is required to address a problem
2. *Goal divergence* – when these actors have different perspectives about the problem and/or how to best address it
3. *Uncertainty* – incomplete knowledge or understanding about how to achieve desired outcomes in a particular context.

As a first step, programmes can diagnose which aspects of their work are complex by asking three questions (Box 2). Being clear about the extent to which the three features of complexity are more or less present can help to build an understanding about why a complexity-informed approach is relevant in a particular programme and what recommendations or practices may be most relevant.

Box 2: Diagnosing the extent to which different programme elements are complex

1. To what extent are capacities and knowledge distributed?

How is the programme structured? Are skills, resources and actions dispersed across different people, institutions and sectors? What unique contributions do people of different ages, genders and socio-economic positions bring? What roles do government agencies, the private sector, non-governmental organisations and civil society associations serve? What is the nature of interaction among these actors?

2. What is the extent of (dis)agreement about programme goals and/or ways to achieve them?

- What is the nature of the *issue or problem* trying to be addressed? Is it a multifaceted concept, such as empowerment or resilience? Or is it a well-defined outcome with established measurement tools, like HIV status and agricultural yields?
- What is the nature of the *intervention*? Do activities vary in frequency and duration? Do they involve less observable, unusual or untested approaches?

3. What is the level of (un)certainty?

- To what extent is the *context* predictable? Are external factors (economic, security, environmental) rapidly shifting and difficult to anticipate?
- What is the *relationship between intervention activities and outcomes*? Is the intervention necessary and sufficient for change to occur? Are change pathways multidirectional and variable?

Teamwork, 2015. © Tri Mukti Yuliana / Flickr

3. Recommendations from complexity thinking and their underlying assumptions

In relation to the three key features of complex programmes, Hummelbrunner and Jones (2013a, 2013b) recommend processes that can help programmes to take advantage of the distinctive nature of their complexity so as to:

- **capitalise on distributed capacities**, decentralising management into subsystems with nested responsibilities, encouraging self-organisation and voluntary collaboration
- **facilitate joint interpretation of key problems and enable negotiation on and commitment to common goals** through participatory processes that include a broad range of perspectives and types of expertise
- **foster learning and adaptation** through experimentation, embedded monitoring and short feedback loops, investing less time in upfront planning and more effort into flexibility, adapting to emerging signals.

Several of Hummelbrunner and Jones's key recommendations are summarised in the first column of Table 1. These help programmes capitalise on distributed capacities, facilitate joint interpretation of problems and enable negotiation of common goals, and foster learning and adaptation. Their guides on planning and strategy development, and managing in the face of complexity, recommend a process rather than prescriptive answers (Hummelbrunner and Jones 2013a, 2013b). Other recommendations based on complexity thinking describe general principles, such as encouraging reflection, humility and acknowledgement of power relations (Mowles et al. 2008, 2014).

These principles and process orientation are sensible and well suited to situations where, by definition, certainty and known solutions do not exist. At the same time, some recommendations appear to be divorced from the realities that many development practitioners experience, and seem to be based on optimistic assertions about how people should behave. For example, decentralised decision-making assumes that power holders relinquish some control. Joint problem identification and goal setting assumes that different types of expertise will be valued, potential conflict among perspectives can be overcome and that, through negotiation, an actionable set of common goals can be identified rather than simply an aggregate list of individual goals. Fostering learning through experimentation assumes that stakeholders are oriented by questions rather than answers, and that they expect that some interventions will not achieve intended results. Adaptation assumes that programmes are willing and able to make changes along the way.

Remarkably similar calls for shifts towards experimentation and adaptation among dispersed actors working in a complex, interdependent system were recommended in a 1965 report from a conference on productivity and innovation in agriculture, convened by the US Agency for International Development and the Massachusetts Institute of Technology:

> *'The diversity of situations in which agriculture operates… – physical, economic, institutional, and motivational – taken together with the pervasiveness of interdependence in any particular situation means that generalizations cannot be applied without adaptive research and experiment.*
>
> *…The fundamental problem…is not so much adoption and spread of any particular set of physical inputs or of economic arrangements or of organizational patterns or of research institutions. Rather it is to build into the whole agricultural process – from the farmer to the university research institute, from the field extension agent to the minister of agriculture – an attitude of experiment, trial and error, continued innovation, and adaptation of new ideas. Once this innovative and experimental spirit permeates the rural community, the farm supply and marketing industries, the bureaucracy, and the intellectual institutions concerned with agriculture, the gulf that presently exists…between city and country, between universities and farmers, between ministers and village officials will be bridged, and continued development can be built into the system. Without it, improvements in performance, though they may occur, will be halting and transitory and thus provide no lasting contribution to agricultural productivity.'*
>
> *(Hapgood and Millikan 1965, p. 22, 28)*

Repeated calls over the last 50 years to acknowledge interdependence and better integrate an adaptive learning approach suggest two things. First, that these ideas reflect many of the settings in which development actors work. And second, that these approaches and practices can be very difficult to apply in reality. There are few published examples illustrating how complexity-informed practices have been integrated into programming and the conditions under which they are more or less feasible and useful (Root, Jones and Wild 2015).

Reality check: observed tensions in practice

Indeed, it is unlikely that all of the assumptions related to distributed decision-making, common goals, learning and adaption hold true. Particularly in recent years, development programmes have faced increased demands to demonstrate results and value for money, and the desire for certainty and the pressure to demonstrate 'success' may lead managers to seek to control activities and outcomes as much as possible.

Development programmes are increasingly delivered through large, multi-project, consortia arrangements, so practitioners may be working within more complicated (but not necessarily *complex*) organisational arrangements. The process of trying to involve many people is often so daunting, conflictual or protracted that that it delays or interferes with implementation. The resulting uncertainty can be paralysing, and can in turn result in inaction or path dependence.

There are multiple examples across different funding agencies where implementation has been delayed by 6-12 months to accommodate multiple revisions of programme proposals in an attempt to determine in advance what will work, and to estimate and plan for potential risks. In trying to reduce uncertainty, large programmes have strengthened centralised oversight and requested frequent monitoring by programme staff. While in some cases this has increased awareness about what activities are taking place across multiple locations, it does not necessarily enhance understanding about the programme issue or problem and how to address it.

Further, in attempting to illustrate complex pathways of change, programme theories of change become either excessively intricate – and therefore unwieldy – or are reduced to a simplistic aggregate model. For many programmes with which we have worked, the number of proposed programme indicators and potential interactions among them has been vast – averaging 58 indicators, and reaching as many as 132. This has led to incomplete and inconsistent data collection and limited analysis or use.

Staff in both implementing and donor agencies are under significant pressure to meet delivery targets, orienting their work towards the fulfilment of pre-specified outputs (and sometimes unrealistic outcomes) rather than adopting an experimental, adaptive approach. And, finally, implementing organisations, in competition for resources, have been reluctant to share experiences of what is not working with others.

4. Pockets of potential: assessing the fit and feasibility of complexity-informed practices

Given such incentive, time and resource constraints, where might there be opportunities to take advantage of distributed capacities, facilitate joint interpretation of problems, and foster learning and adaptation? Applying complexity-informed practices involves assessing both the fit and the feasibility of recommendations to a particular development programme.

To know which recommendations may be appropriate (that is, fit), managers should first diagnose which elements of their programme are complex, as highlighted by other scholars and summarised in section 2 of this paper. However, even where complexity thinking may be a good fit for certain aspects of a programme, some of the underlying assumptions identified above may not hold true. Therefore, complexity-informed practices also have to be *feasible* in the settings in which they are applied.

In some cases, it might be useful for programmes to think in terms of 'pockets of potential' for integrating complexity-informed approaches. Table 1 poses guiding questions to determine the extent to which different recommendations can be pursued by identifying facilitating or constraining institutional factors. The questions are presented according to the three features of complexity referred to throughout this paper (distributed capacities, joint problem identification and goal setting, and adaptive learning), but are inter-related. These questions can serve as the basis for conversations within and between funding agencies and implementing organisations to discuss which practices may be most feasible in their specific situation.

Factors influencing feasibility

This section briefly discusses recommendations related to the three features of complexity in turn, identifying different factors that may affect the feasibility of each. When there may be pockets of potential, the paper suggests practical steps and processes that can aid integration of that particular recommendation.

Decentralised management may not be realistic for high-profile programmes where power holders want to retain centralised control and to know what is happening at all programme sites at all times. Some decisions may be non-negotiable, while other issues could be left to the discretion of implementing staff. It is therefore important to clarify the authority and scope of decision-making. Facilitating voluntary collaboration will require devolved mechanisms and informal modes of communication that are not channelled through the centre or lead organisation.

Agreeing on shared objectives and establishing trust may be more difficult when staff turnover is high and there is not a core group of stakeholders involved over time. Joint problem identification and goal setting may therefore be more feasible among stakeholders with a history of productive working relations, when they are not competing for resources and when they are jointly responsible for deliverables. It will take dedicated time to engage, communicate and negotiate among a large number of dispersed people. Participatory processes require mechanisms for periodic interaction and clear decision-making criteria.

Adaptive learning is less appropriate for programmes that are strongly oriented towards achieving pre-specified deliverables and scaling up existing interventions. Experimentation involves ending efforts that are not working and reallocating resources elsewhere. Adaptation may be more feasible if changes do not require substantially different skills and can be implemented in a shorter time frame. Programmes could set aside a proportion of the budget to bring in new expertise to supplement existing staff skills. Programmes and staff may be rewarded based on trialling and adaptation or sanctioned for failing to deliver specific activities and outcomes, which will drive their focus on one or the other. As such, adaptive learning requires incentives for learning, not simply performance.

A short-cycle experimental approach involves more frequent data collection, analysis and interpretation. Britt (2013) notes that complexity-aware monitoring tools are intended to complement standard performance monitoring, thus increasing the time and investment in monitoring to include additional approaches. Adaptive programming may limit the opportunity for time series analyses, to examine changes in the same outcome over time. The emergent nature of problems and solutions makes findings less generalisable.

Some factors may influence the feasibility of more than one recommendation. Organisations have different institutional cultures that influence what is possible. The orientation of senior management towards greater control and risk aversion or experimentation and

Table 1: Pockets of potential: guiding questions to assess feasibility and practical steps to integrate recommendations from complexity thinking

Recommendations from complexity thinking	Reality check	Facilitating factor	Constraining factor	Practical steps to integrate recommendations
Capitalise on distributed capacities: • decentralise decision-making, give autonomy to implementers on activities and resources • create nested responsibilities • encourage self-organisation and voluntary collaboration	How strong is the desire for control? What is the level of risk aversion?	Low	High	Capitalising on distributed capacities can be facilitated through: • clarity on scope and authority for decision-making • decentralised mechanisms for communication
	What is the nature and frequency of communication and reporting to funders?	Periodic reporting on overall progress	High frequency activity updates	
	What are the thresholds for changes to the budget and implementation activities? (i.e. >10% across budget categories requires approval)?	High flexibility	Low flexibility	
	How and how often do people from different organisations/sites communicate?	Periodic formal communication Informal, decentralised communication	Infrequent Through the centre	
Facilitate joint interpretation of problems and negotiate common goals: • create participatory processes that include a broad range of perspectives and types of expertise • build trust and collaboration between stakeholders	How long have stakeholders worked together?	History of working together Productive relations	No existing relationships Conflictual relationships	Joint interpretation of problems and goals can be facilitated through: • repeat interactions to building trust and enable participation • sufficient time to engage, communicate and negotiate among a large, diverse group of people • groups and rules to discuss and make joint decisions • organisations jointly responsible for outcomes
	Are organisations competing for resources?	No	Yes	
	What mechanisms are in place for discussion and shared decision-making?	Established groups Transparent criteria for joint decision-making	Do not exist Unclear criteria	
	What is the extent of overlap of goals between the programme and each organisation?	Substantial overlap	Fundamental differences	
	Who is accountable for activities and results?	individual or organisational accountability	Joint accountability	
Foster learning and adaptation: • spend less time and resources on ex-ante analysis and upfront planning, formulate clear principles for action rather than specific plans or results • approach the intervention as a portfolio of experiments, identify multiple options expressed as hypotheses and assumptions, test a few small-scale actions, fail fast • conduct iterative impact-oriented monitoring that is embedded throughout implementation chain; short feedback loops, timed to feed into next planning cycle • enable flexibility, responding to available signals about performance and progress as you go along • incentivise learning	What level of specificity do funders require in programme plans? How many revisions are required prior to programme approval?	Principles for action are sufficient Initiation after discussion of first proposal	High specificity required Multiple revisions, long preparation time	Fostering learning and adaptation can be facilitated when: • staff and organisational capacities and skill sets are diverse or there is flexibility in staffing • shorter planning periods • more frequent data collection, analysis and interpretation • stopping activities that are not working and reallocating resources elsewhere • learning objectives included as deliverables
	If changes are deemed necessary, will new expertise be required?	No	Yes	
	How long will it take before changes can be implemented?	Short time frame (>1 month)	Long time frame	
	What is the balance between performance goals and learning goals?	Equal weight to learning goals	Heavy focus on activities and performance outcomes No learning goals	
	What are the sanctions if programme activities or outcomes are not met?	Sanctions if learning goals not met	Sanctions if activities or outcomes are not met: Reduced/non-payment Contract not renewed Risk to individual or organisational reputation	
	How much time and resources are allocated to data collection, analysis and interpretation?	Dedicated staff time for data analysis and interpretation Frequent discussion	Unspecified resources allocated only for data collection only No or infrequent analysis and interpretation	

change may vary so the arrival or departure of key staff could expand or limit options. Programme phase, size and duration may also affect the feasibility of different practices. There may be more opportunities for decentralised or joint decision-making at later points in the programme cycle, after stakeholders have interacted with one another for some time. External factors, too, may influence the feasibility of decentralisation and adaptive learning. Hall and Clark (2010), for instance, retrospectively describe a complex adaptive system that arose in response to a crisis that threatened food security and livelihoods in Uganda. Under different circumstances, changes may have been less substantive, comprehensive or noticeable.

Illustrating pockets of potential in practice

To demonstrate how fit and feasibility can be assessed, we return to the illustrative development programme introduced in section 2. In this example, which aspects of the programme are most suitable to a complexity-informed approach? What may be feasible and how could they best target their efforts?

In terms of *fit*, the intervention activities in this example are, in themselves, not complex; the programme structure is complicated as it is operating across multiple locations with many actors but management and delivery structures are clearly delineated, and community-level activities do not require joint action across all sites. Since intervention activities are relatively consistent across sites, it is not possible test multiple intervention approaches to achieving the programme goals. Similarly, given this programme structure, it may be less applicable to focus on dispersed capacities and attempt to decentralise management. Instead, it may be more appropriate to apply a complexity lens to better understand the multiple dimensions of women's economic and social empowerment and the ways in which different contexts affect their experiences; that is, to reduce uncertainty about the problem across diverse contexts.

In terms of *feasibility*, like most programmes, staff in this example would most likely have to report annually on implementation progress for donors. Although it may not be feasible to gather, analyse and discuss information on a large number of additional indicators frequently, these periodic assessments could include information on a few key contextual factors (economic, environmental, political). This information could help increase understanding about how contextual factors may shift over time and across programme sites, and how they may affect intervention activities and women's economic and social status. Staff across sites could then jointly discuss these patterns at annual programme meetings. Realistically, the programme may not be able to make major changes to intervention activities during the current programme cycle but this information could help inform future programme design and intervention approaches. There may be potential to include a learning objective in addition to performance objectives. Together, these efforts could enhance an adaptive learning approach to reduce uncertainty about a persistent, but still poorly understood, problem.

In practice, there are also specific examples of how development programmes have been able to take advantage of pockets of potential. When organisations form consortia, they are committing to shared accountability. Programmes in which ODI has been involved have established cross-consortia steering committees for joint discussion and decision-making. They have annual meetings with breakout sessions for self-organised subgroups to develop relationships and brainstorm together how to address common challenges. Some donors enable flexibility by allowing for budget reallocations up to a specific threshold. None of the large, multi-component, multi-site programmes with whom we have worked have attempted to address all of the dimensions of complexity in their programmes but are, in their own ways, experimenting (though not always explicitly) with ways to capitalise on distributed capacities, conduct joint problem identification and goal setting, and incrementally learn and adapt.

5. Conclusions

Complexity thinking can offer useful insights on how to approach situations and challenges faced by development practitioners. However, these recommendations rely upon underlying assumptions about relationships, power and flexibility that may not always hold true in practice, where organisations have established internal and external ways of working. By posing guiding questions to assess the fit and feasibility of integrating complexity-informed practices, this paper aims to help development programmes identify which dimensions of complexity are most appropriate and realistic to address; and, how they can work within their operating constraints to take advantage of distributed capacities, joint interpretation of problems and experiential learning.

Classifying which practices are more and less feasible enables decision-making and management styles to be explicit, rather than couched in aspirational rhetoric about sharing and collaboration, learning and adaptation, which is not realistic in practice. If undertaken before programme implementation, it can help identify decision-making and communication mechanisms that can facilitate interaction among dispersed actors, create incentive structures that reward learning as well as delivery, and allocate sufficient time and resources for data collection, analysis and interpretation to enable monitoring to inform decision-making.

Dumaguete, Philippines. Photo by Arnaldo Pellini/ ODI

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