Systems concepts and development

# Bucking the system

**Over the last 50 years the systems field has expanded to encompass more than 1000 methodologies. In this article, Bob Williams describes three core concepts of systems thinking.**

Many of the issues that systems thinking tries to resolve are familiar to people involved in international development: power, control, unanticipated consequences, unacknowledged interests, differing motivations and rapidly changing circumstances. But the systems field is broadening its scope. According to some estimates, as many as 1000 separate methodologies and methods fall under the systems banner.

The systems field has moved increasingly away from descriptions of how the world works to a set of constructs that allow you to think about the world. For instance, 'soft systems' concepts essentially discount the idea of a universally identifiable thing called 'the banking system'. Instead, there is a set of activities that one person calls 'the banking system', while someone else may choose a different set of activities to define it. Soft systems thinkers argue that comparing and contrasting ideas of what constitutes a banking system provides more powerful insights than just trying to identify a unitary concept.

Instead of chasing definitions of 'system' or arguing the merits of particular systems methods, those in the field have sought to identify what core concepts underpin all the methods and definitions floating around, and what exactly systems thinking is. This article identifies three core concepts that emerged as part of the historical development of the systems field over the past 50 years.

### Three core systems concepts
During the 1960s and 1970s the focus of the systems field was very much on *inter-relationships*. Methods were developed that explored them in depth, such as system dynamics and the viable systems model. By the mid-1970s

### Summary

- Systems theory developed over the last 50 years around three core concepts.
- During the 1960s and early 1970s inter-relationships were central to systems thinking.
- From the mid-1970s, models were developed to apply different perspectives to inter-relationships.
- In the 1980s, the implications of various perspectives were examined – who determined which perspectives were relevant to a system and therefore set the system's boundaries.
- Systems thinking can be useful in resolving big issues relating to development. It can, for example, help determine on what level – local, national, transnational – interventions should occur, and what the consequences of such choices might be.

it was clear that the inter-relationships were not neutral concepts. The relative importance of particular inter-relationships depended on the different purposes you could ascribe to any single situation. Thus methods were developed, such as soft systems methodology, that helped explore the implications of applying different *perspectives* to the same situation. However, by the mid-1980s it was clear that these perspectives were also not neutral. Perspectives determined what was seen to be relevant and what was not; they determined what was 'in' the system and what lay outside it. Whoever defined the dominant perspective controlled the system's boundary. Thus the importance of studying *boundaries* and critiquing boundary decisions (and those who made them) became the third key element of a systems approach.

These three concepts are essential both for understanding systemic interventions and for distinguishing them from other approaches to dealing with complex situations. They underpin all the models,

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An example of different boundaries: Rwandan woman overlooking the hills.

metaphors, methodologies and methods used in the systems field. I will use the example of an HIV/AIDS project in Ghana to illustrate what this means in practice.

### HIV/AIDS project in Ghana

The HIV/AIDS project in Ghana was initially funded by a Catholic aid agency to reduce the incidence of HIV/AIDS and other sexually transmitted infections (STIs) in a mining area. The project had three major threads. One was a peer-to-peer education programme for commercial sex workers. Another sought to provide sex workers with alternative employment via microloans to establish their own businesses. And the third was the improvement of local STI services within the health system. At first glance this seems to be a nicely integrated, even 'systemic' approach to the problem; education of sex workers, improvement of health care and development of alternative employment. Yet the project had limited success. The use of systems concepts in the next three boxes may shed some light on why.

### Ghana project: Inter-relationships

The Ghana project failed to grasp the inter-relationships necessary to run a successful microcredit scheme, which spilled over to other aspects of the project. The scheme was supposed to provide incentives for sex workers to participate in peer-to-peer education programmes by giving them access to loans to set themselves up in non-sex-work businesses (mostly hairdressing). In fact, the opposite happened. Why?

The project was started well before an administrator for the scheme was selected. The administrator – a local NGO – then failed to inform its staff that it had taken on this responsibility. By the time the confusion had been sorted out three years had gone by. Owing to inflation, the loans had by then depreciated to the extent that they were sufficient only to support existing businesses, not establish new ones. Also, the terms of the loans were vague, with no clear repayment obligations. So no one bothered to pay off the loans, which reduced the number and size of the loans available for recruiting peer educators to replace those who had left out of frustration.

## Inter-relationships

'Inter-relationships' is the most familiar systems concept. How things are connected and with what consequences stems from the earliest thinking about systems. When we talk about a filing system, or the health system, the image we have in our minds is of a set of objects and processes that are interconnected in some way.

The study of inter-relationships is key to any systemic inquiry. In particular, systems approaches look at the following aspects of inter-relationships:

- dynamic aspects (where inter-relationships affect the behaviour of a situation over a period of time);
- nonlinear aspects (where the scale of the 'effect' is apparently unrelated to the scale of the 'cause'; often, but not always, caused by 'feedback');
- the sensitivity of inter-relationships to context (where the same intervention in different areas has varying results, making it unreliable to translate a 'best' practice from one area to another); and
- distinguishing the behaviour of 'simple', 'complicated' and 'complex' inter-relationships.

The systems field draws on many methods that focus on inter-relationships. These include system dynamics, Cynefin, causal loop diagramming, concept mapping and social network analysis.

## Perspectives

A systemic approach is more than a study of how boxes and arrows fit together or networks operate. What makes it systemic is how you look at the picture, big or small, and explore interconnections. When people observe inter-relationships they 'see' and interpret those inter-relationships in different ways.



Rwandan villagers standing around boxes.

*Rwandan villagers exhuming the remains of genocide victims.*

The introduction of 'perspectives' as a core systems concept was profound. First, it highlighted the notion that you can 'see' the same situation in different ways, and this affects how you understand the system. This isn't the same as 'stakeholder' perspectives. Different stakeholders may share the same perspective – one stakeholder can hold several different perspectives. We rarely have a single perspective on any set of events, yet the theories of management that dominate the international development world tend to force us to pick one.

Second, it drew the focus away from the 'system' as it supposedly exists in 'real life' and allowed us to consider alternatives; what it might be like, could be like or even should be like. This opened up the systems world, because the similarities and differences between what is and what might be create puzzles, and contractions can generate better insights into the real-life behaviour of programmes. The systems field draws on a number of methods and methodologies for exposing and exploring perspectives. These include soft systems methodology, dialoguing and activity systems methodology. All tend to address the following questions:

- What are the different ways in which this situation can be understood?
- How are these different understandings going to affect the way in which people judge the success of an endeavour?
- How will it affect their behaviour, and thus the behaviour of the system, especially when things go wrong from their perspective? With what result and significance?

### Ghana project: Perspectives

In workshops, participants identified several ways of seeing the project and discussed how these perspectives shed light on what is versus what might be. The 'economic development', 'HIV/AIDS prevention', 'sex worker reduction' perspectives shed light on understanding why people were involved and how they behaved. They provided insights into why some educators stuck with the project and others did not, and, depending on which perspective was most powerful for them, why key players behaved the way they did.

One suggested perspective was that of 'radical Catholics challenging church dogma on condom use'. Although there was no evidence for this, exploring that perspective systemically provided the platform for discussing the erratic and apparently 'irrational' behaviour of the funding agency that had a quite significant impact on the project (condoms were initially funded and then not, so peer educators had to start selling them and were accused of profiteering). Another perspective, 'effective use of medical services', provided a vehicle for discussing why the medical director gave drugs away despite the opposition from some local NGOs.

People participate in a project for many different reasons. Think of your own involvement in the international development field. How many different ways of seeing your involvement are there, and how do they affect the kinds of decisions you make? These interpretations, these motivations and the behaviours that flow from them may have little or nothing to do with the formal goals or objectives of a project or programme. Yet they will affect how the programme performs and what the results are.

Thus we cannot comprehend the behaviour of a programme without identifying and understanding a wider range of perspectives. Perspectives help to explain and predict unanticipated behaviours because they give us a window into motivations. They also acknowledge the reality that it is people who make programmes work, and not some imagined 'logic' like the logical framework (logframe).

### Boundaries

Boundaries have always been an important systems concept. They drive how we 'frame' systems. A boundary differentiates between what is in and what is out, what is deemed relevant and irrelevant, who benefits and who is disadvantaged. Boundaries are fundamentally about values – they are judgements about worth.

However, by the mid-1980s questions were being asked more explicitly about how boundaries are set, who sets them and what the consequences are. It's fine to map relationships and it may be fine to acknowledge that there will be different perspectives on those relationships. But those relationships and perspectives are not neutral – someone decides which are more important than others.

Boundaries are the sites where values get played out and disagreements are highlighted. A lot of power issues are wrapped up in boundaries – just as the person with the magic marker controls what goes on the whiteboard, the person whose perspective dominates a project decides the boundaries. Context matters too.

Systems approaches often focus on four areas: entrenched values, command and control, dogma and righteousness.

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### Ghanese project: Boundaries

When explored more deeply, poor assessments of boundary issues contributed to many of the problems the project encountered.

Entrenched values: Whose interests are being served and whose interests should be served?
In terms of the microfinance scheme, despite the rhetoric, it seems that the interests of the peer educators were marginalized, resulting in a significant decline in support for the programme.

Command and control: Who controls what resources and who should control what resources?
This is a common issue in the development field. The peer educators had relatively little control over the resources they needed to do their jobs. They had no control over their budgets, and so were blamed for non-payment of expenses. The supplies of free condoms were erratic, so they had to buy them from drugstores and then sell them. Transportation was an issue – the peer educators could only travel as far as their bicycles would take them, which meant that certain key sites were excluded from the project.

Dogma: What expertise is required; whom do we trust as experts and what expertise should be required. What's the risk of assuming this is all the expertise needed?
It was assumed that the sex workers were ignorant of HIV/AIDS issues and needed 'educating' by their peers. It was assumed that these 'peers' did not have the expertise to design engaging workshops. So educational materials were produced at considerable expense by 'experts'. In reality, both assumptions were wrong. Sex workers knew a lot about HIV/AIDS. What they needed (and often didn't get) was free condoms. The peer educators proved far more successful at educational processes than assumed and did not use the materials created by the 'experts'.

Righteousness: Whose interests are being excluded, marginalized or harmed by the way we are framing the situation, and whose interests should be excluded, marginalized or harmed?
A series of decisions were made that effectively excluded or marginalized potentially key players. The focus was on female street sex workers. Brothel-based workers, transient workers and male sex workers were never part of the project. The interests of and potentially negative reactions from pimps, who have a major interest in the economic side of sex work, were not considered.

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### Systems thinking and holism

One consequence of the focus on boundaries is that it shows how the word 'holism' is often misused. It doesn't mean you are looking at 'wholes' – that's an intellectual and physical impossibility because nothing is a 'whole', except perhaps the cosmos. It just means you are acutely aware of how the parts fit together and the consequences of focusing on one set of parts rather than others.

There is another reason why 'holism' is problematic when applied to the systems field. It implies that systems thinking only applies to big issues. I've often heard people talk about dealing with issues 'at the systems level' – implying systems concepts are primarily used at a large scale. In fact the systems field was originally developed as a problem-solving approach and thus tends to work best at the medium or small scale – at the level where you can actually do something with the insights you've gained.

### Systems thinking and international development

The reassessment of international development over the past decade, the debates surrounding the potentially negative effects of the Millennium Development Goals (MDGs), the focus on results-based management methods and the shift toward capacity development at a national level raise many inter-relationship, perspective and boundary questions. The potential for using systems concepts has increased. In particular, the ways in which systems methods pose questions of boundaries provide an intellectual base for and practical means of resolving many of the big issues confronting international development. These issues include at what scale (national, transnational, local) should interventions be conceived and assessed, who should be the primary beneficiaries and who/what could be harmed by that choice, can that tension be resolved, what expertise is considered relevant to an intervention and who should control what resources?

The critique of the HIV/AIDS project in Ghana example is perhaps too brief to bring out the full force of systems thinking, but the potential, I hope is clear. ∎

*This article is based on previous writings by the author and contributions from Gerald Midgley, Richard Hummelbrunner, Amy La Goy, Iraj Imam, Martin Reynolds and Glenda Eoyang.*

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