

A resilience perspective on complexity in development



PHOTO: AX TROELL/AZOTE

The complex nature of development

This note summarises discussions from a Global Resilience Partnership Learning Workshop held at the Stockholm Resilience Centre, February 2017.¹

CONVENTIONAL APPROACHES TO DEVELOPMENT and humanitarian challenges have often treated problems as though they were only technical challenges. Consequently, favoured responses have included “simple” interventions, such as building schools or toilets, or perhaps more complicated ones, requiring multiple well known interventions such as improving the efficiency of agriculture through water harvesting, and fertiliser interventions.

Often, the word ‘complex’ is used as a proxy for describing why a project has failed. But acknowledging that systems are complex requires much more.

Outputs for these projects are simple to define and measure (e.g. how many schools were built). However, as numerous projects show, the impacts and effects are not simple, especially when these projects have not considered the range of cross-scale and cross-sectoral drivers, such as; markets, climate change, migration, cultural practices, or emerging diseases that shape the original challenges and the “simple” solution. Trying to manage problems and systems as separate parts, and ignoring the interdependencies of people, place and the environment, is inadequate and problematic.

Often, the word ‘complex’ is used as a shorthand description for why a project has failed. But acknowledging that systems are complex requires recognizing that systems are made up of many parts, interacting with one another from local to global scales. Changes to one part of the

system cascade through regions, connecting across scales often landing in unexpected places.

As just one example, a review of multiple studies has shown that African coastal fish stock declines, the consequence of a myriad of social-ecological-economic factors, have caused a shift in local diets. Individuals started to rely on the consumption and trade of ‘bushmeat’, involving species such as chimpanzees and bats. Several of the mammals used for bushmeat are also well known sources of zoonotic diseases, including Ebola. In this way, the ecological crisis of fisheries collapse, propagates into societal crises of disease outbreaks, which can rapidly spread and move across scales through travel and trade.² This specific cascade is far from unique and a number of crises associated with health and food security appear as a result of social-ecological interactions cascading across time and space. By digging deeper into the root causes of these cascades, solutions emerge which are better able to make sense of and respond to this complexity. From this deeper understanding, infectious disease management is no longer only about health infrastructure but also about fisheries management, food access and diversity, cultural practices and many other issues. In turn, fisheries management is no longer only about catch limits and conservation. Responses must emerge jointly to navigate these cascading crises.

Complexity also requires recognizing that each part of the system is dynamic and always changing. Changes in complex systems are not linear and may result in surprises – situations in which the behaviour in a system, or across systems, differs qualitatively from expectations or previous experiences. These dynamics and changes can be linked to rapid shifts, such as weather patterns that lead to coastal

storms or geopolitical events that lead to political turbulence. These changes can also be gradual such as the accumulation of pollutants or behavioural changes. These gradual changes are often less obvious and tend to go unnoticed, but they can be critical if they accumulate and go past a certain tipping point leading to rapid, surprising and often irreversible change.

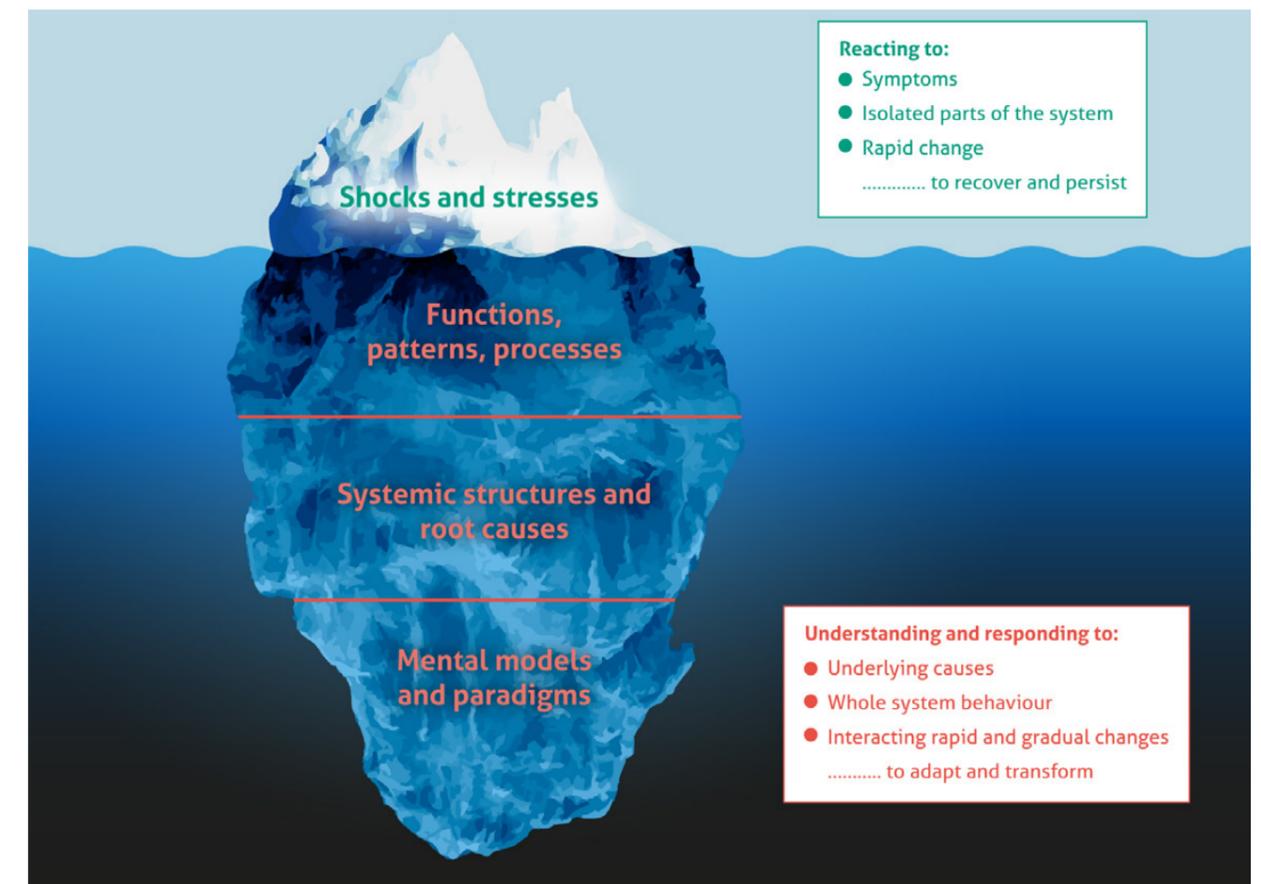
Complexity recognises context. There may be contexts where a specific tipping point or surprise is much more likely than in others, or where certain factors are more important than others. For instance, the strength of informal and formal institutions determines how a system responds

to a shock (e.g. whether a drought may lead to conflicts). Development and humanitarian efforts are increasingly burdened by the crises that these tipping points create. Awareness is growing that attention needs to broaden from narrowly focusing and reacting to the results of these tipping points and surprises. Consideration must also be given to: the persistent and protracted underlying causes and dynamics of surprise, the social, cultural, and biophysical structures and processes that comprise the context in which the events and development efforts occur, and their influence on the likelihood and outcomes of other events.

Resilience as an approach to complex problems

By adopting a complexity lens on the world, resilience, with its roots deep in complexity science and the science of surprise³, helps to dig below the surface of events, shock and surprises that dominate these reactive approaches. It forces

our attention to what lies below the surface – the multi-sectoral and multi-scalar patterns, processes, structures and paradigms and their interactions that are the root causes of the events that first claim our attention.



The complexity iceberg. A complexity lens helps us to see below the surface and move beyond consideration and immediate reactions to surface level shocks and stresses to understand: 1) Functions, patterns, processes 2) Systemic structures and root causes 3) Mental models and paradigms.

¹ Participants included the GRP Secretariat, the Swedish International Development Agency (Sida), USAID, Rockefeller Foundation, Stockholm Resilience Centre, TCC Group, ITAD.

² Galaz, V., Moberg, F., Olsson, E.-K., Paglia, E., & Parker, C. (2011). Institutional and Political Leadership Dimensions of Cascading Ecological Crises. *Public Administration*, 89(2), 361–380. <http://doi.org/10.1111/j.1467-9299.2010.01883.x>

³ Holling, C. S. (1996). Surprise for science, resilience for ecosystems, and incentives for people. *Ecological Applications*, 6(3), 733–735.



Planet earth; A beautiful complex place. Image: Wikimedia Commons

RESILIENCE OFFERS A WAY to embrace these challenges because it is well suited to working in the complex problems space. Resilience insights suggest that in order to navigate the complexity of the world, development interventions must take into account that:

1. People, place and environment are deeply intertwined
2. Change and surprise are expected
3. Change may be both fast and slow and both types may happen at the same time
4. The global and local, the past and present, are connected in unexpected ways
5. Uncertainty is unavoidable
6. Systemic change does not proceed in a linear manner
7. Thresholds and tipping points exist and crossing them may lead to changes that are irreversible.

Resilience includes the ability to: persist in the face of challenges, adapt to changing circumstances and new

realities, or transform to fundamentally new paths for development. Using resilience as an approach for understanding complexity offers a different way of seeing the world, and a new perspective of how change happens, revealing everything below the surface, that enables or constrains persistence, adaptation or transformation. Resilience provides an approach with which to understand and act in a complex world – a deeply interconnected ever-changing world, where controlled, planned approaches, and existing knowledge and current solutions are not enough to navigate highly dynamic and uncertain futures.

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