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Complexity - the simple path to success in development

The development industry lacks mechanisms which are common in successful complex systems, such as specialisation and exchange, and feedback, which drives out poor performance and scales up success



Unexpected success: social policy programme Oportunidades in Mexico City, pays families to send children to school. Photograph: Jessica Chosid/Getty Images

We are surrounded by complex adaptive systems: animal biology, the internet, ecosystems, competitive markets, and many others. These systems have many common characteristics. They are open and adaptive. They include their own sources of innovation – for example, through sexual reproduction – by which they improve and respond to a changing environment. They take advantage of distributed cognition rather

than central decision-making.

The whole is greater than its parts, usually because of a combination of specialisation and exchange (of genes, ideas, or services). Success is easier to explain in retrospect than it is to predict in advance. Successful systems adapt through feedback, which amplifies successful innovation and kills off ineffective change: for example, survival of the fittest allows good genetic variations and combinations to reproduce; in markets, bankruptcy eliminates firms that fail.

Systems such as this are difficult to design or manage centrally. But we can nurture institutions which make them likely to thrive, while remaining agnostic about their destination. We don't try to pick winners among firms, but we do set rules to make the market work better: preventing monopoly, promoting transparency, encouraging innovation and trade. We don't try to design the results of human evolution, but we have a taboo against incest because it undermines the genetic benefits of sexual reproduction.

Development requires the emergence of successful economic and social systems, so we should try to learn from the common characteristics of successful complex adaptive systems. Yet the conventional wisdom about aid effectiveness is not easy to reconcile with these lessons: it frowns upon the proliferation of donors; it promotes harmonisation and activities aligned to a blueprint for development; and it implies a predictable connection between individual activities and outcomes. The development business lacks mechanisms which are common in successful complex systems, such as specialisation and exchange, and feedback, which drives out poor performance and scales up success.

Some of these feedback loops are now being strengthened. As Madeleine Bunting reported earlier this month, Engineers Without Borders has published its first failure report. Setting out openly and honestly what has not worked, and drawing lessons from those experiences, helps strengthen the feedback loop. The UK government's promotion of aid transparency and the US government's recently announced new approach to evaluation are also important and welcome.

One of the most striking – and to my mind unexpected – innovations of the past decade has been the growth of cash transfers to increase the resilience of the poor. This idea, which originated in Latin American countries, has been reproduced across the developing world mainly because Progresá in Mexico was subjected to rigorous evaluation that demonstrated its effectiveness. It shows that good evaluation can be part of a feedback loop which takes decentralised innovation to scale. We must also strengthen feedback from the intended beneficiaries themselves, for example through social accountability.

An example of how the development industry can benefit from the lessons of complex adaptive systems is Advance Market Commitment, which has been used to promote the

development and production of a vaccine against pneumococcal infection. Previously, donors would select and subsidise companies to develop modified vaccines for use in developing countries and produce them at the scale required. But it would take about fifteen years before vaccines, which were widely used in industrialised countries, became available in developing countries.

Under the Advance Market Commitment, a group of donors instead guaranteed a more lucrative market for vaccines used in developing countries on the basis of which companies could make their own investment in the necessary research and production facilities. The companies competed to bring their product to market quickly to reap this promised reward. The result: in December 2010, the rollout of the pneumococcal conjugate vaccine began in developing countries within a year of its introduction in rich countries and at a fraction of the price. This approach to encouraging innovation and enterprise has a wide variety of possible applications, from agricultural technologies to clean energy and climate change adaptation. It illustrates the principle that it is sometimes better to set clear boundaries and then give appropriate incentives to decentralised decision-makers than to try to design and manage the results centrally.

Some 25,000 people die each day of easily preventable diseases and about 1 billion people live in absolute poverty. Between us we have the resources and the knowledge to put this right: but we lack an institutional framework which puts those assets properly to work. We are likely to make faster progress by nurturing the conditions for successful complex adaptive systems: decentralised decision-making; a wide array of variation and innovation; specialisation and exchange, and feedback loops that promote success and dispense with failure.

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