Meadows, Donella H. – Thinking in Systems

Chelsea Green Publishing, 2008, [Surrounding Thinking] Grade ★★★★

We are systems and we are surrounded by systems. The hydrological cycle of water precipitation and evaporation is a system inside the larger system that is the natural environment. The stock market is a system and it's a part of the larger systems of financial markets and the economy as a whole. A cell is a system and a building block for the larger system of your body. According to the author, the late Dana Meadows, a systems researcher originally at MIT, a system is "*an interconnected set of elements that is coherently organized in a way that achieves something*". Systems always contain elements, interconnections and a function/purpose. A system is more than the sum of its parts and displays varying degrees of complex behaviors. The author aims to show the reader a complementary way to see and understand the world.

Thinking in Systems contains three sections. In the first the author in a reductionist fashion presents the components of systems, then shows how they are interconnected to produce various effects and finally displays an array of archetype systems - what Meadows calls the systems zoo. A key insight is how no system can be understood by analyzing its parts but, if at all, by their exchanges.

In the second part the author goes deeper into her analysis of how systems function – or sometimes mal-function, as in the case of for example the so-called tragedy of the commons. Systems are not always easy to understand or even detect as they manifest themselves through a series of singular events. Mankind is easily seduced by spectacular happenings but by this easily misses underlying patterns and large slow changes. By thinking in systems a different understanding is gained which, if nothing else, often serves as an antidote for the need to find individual scapegoats or succumbing to conspiracy theories. To a very large extent systems cause their own behavior. The concluding section discusses various ways to change system behaviors by focusing on their main leverage points.

Meadows was the lead author of the hugely influential *The Limits to Growth,* published 1972 and associated with the so-called Rome Club, and she was as such lionized by later day environmentalists. The thoughts then presented by Meadows and her co-writers paved the way for much of the thoughts on peak-oil and a critique of growth-obsessed economism. The reader of *Thinking in Systems* gets an easily read and well-articulated primer on the topic but must be prepared for an anti-business tone. Economic growth is generally deleterious, GDP is a faulty and perilous measure, interest rates are one of the worst ideas of mankind, the industrial culture has destroyed our moral and companies are compared to cancers – from a systems function aspect, at least. Without getting into the debate of the limits to growth, today it's not hard to conclude that the authors at that time underestimated the effects of technology and innovation and didn't understand how the pricing mechanism leads to substitution and change. That said, throughout the book Meadows – probably due to her deep knowledge of complex systems – generally displays a humble and curious attitude.

Those investors who are well versed in George Soros' concept of reflexivity or in the stock market as a complex adaptive system, as popularized by for example Michael Mauboussin, will feel very much at home in Meadows' view of systems. Interplays between reinforcing and balancing loops, delays between cause and effect and stocks that reach tipping points cause behaviors that we with our limited rationality only partially can understand. Quite poetically Meadows concludes *"We can't control systems or figure them out. But we can dance with them!*" To succeed in the stock market it helps to get a feel for the flow of the market and to respond seamlessly to feedback from it.

For anyone wanting to understand systems this is definitely the place to start. And yes, it will give the reader a different perspective of the world.

Mats Larsson, January 22, 2018