

5 Differences between complexity & systems thinking



Over the last 10 days I've had the privilege of accompanying [Prof Dave Snowden](#) to various workshops and client meetings in Johannesburg & Cape Town. It's been almost 5 years since his last visit, so it was really great to catch up on some of his new thinking. We also connected with other people who've been involved in [Cynefin](#) since the early IBM days, so that was fun!

I've learnt so much, it's enough to fill several posts! But one of the learnings I find very useful is clarity Dave brings around the differences between Complexity thinking & [Systems thinking](#).

Often people see Complexity as a subset or slight variation on Systems thinking, but Dave has drawn some clear distinctions that I find very useful. These aren't the only differences, but they're the ones that remained top of mind:

1. Ideal future vs evolutionary potential of the present

Systems thinking seeks to define an ideal future (e.g culture) and then define strategies to "close the gap". Complexity works with the evolutionary potential of the present i.e. it seeks to understand the "now", find out what can be changed (in a measurable way) and then take small evolutionary steps in a more positive direction without any assumption of the end destination. I really like this, because I've yet to experience a project where the "ideal future" was actually realised. Most companies end up with cynical staff who become more and more disengaged with each new set of "mission, vision & values".

2. Complex systems are modulated, not driven

This partly explains no 1: A driver assumes single causality i.e. if A drives B, changing A should have a predictable effect on B. I've been part of several facilitated sessions where people try to figure out what is a "driver" and what is being "driven". In complex adaptive systems, this simplistic approach adds very little value, as complex systems are modulated, not driven. The following metaphor is useful to understand what this means: Imagine a metal table with several powerful magnets spaced around underneath. On top of the table are iron ball bearings. While the strength and polarity

of the magnets remain constant, the bearings form a stable pattern on top of the table. If one magnet changes polarity and the others remain constant, the pattern formed by the bearings will change in a predictable way. That would be an example of a driver in systems thinking terms. In a complex adaptive system however, when one magnet changes, the others change as well in ways that don't repeat. The patterns formed by the bearings therefore become unpredictable, depending on which of the magnets have changed and in what way. The magnets are examples of modulators, factors or forces that influence the system at the same time and in unpredictable ways.

In light of this uncertainty, defining an ideal future becomes pointless. But movement and direction is important.

3. Complex systems are dispositional, not causal

The way I understand this (which may be wrong!) is that whereas one cannot accurately predict the behavior of a complex adaptive system (i.e. A → B), one can observe tendency or propensity for the system to move in a general direction. As we move in any given direction by making choices (and per definition closing off opportunities as we make these choices), there will always be a certain fluidity, not a direct path as in a causal system. (if Dave reads this post, he may want to elaborate in the comments)

4. Extrinsic rewards destroy intrinsic motivation

Setting explicit outcome-based targets with associated incentives destroy intrinsic motivation i.e. people start chasing the target without considering potential consequences. Another way to put it: Anything explicit will be gamed. Several years ago I saw a perfect example of this in one of the culture projects we did for a large bank. They had issues with their Customer Information File, which wasn't being updated correctly by frontline staff. They had duplicate entries; incorrect contact details, in short there was causing nightmares for them from a CRM perspective. We conducted a narrative enquiry, and found an interesting pattern. Customer facing staff members in the branches were being measured on among other things;

- how many customers they saw in an hour
- how many of a specific product they sold in a day/week

This led to a decrease in customer satisfaction, as it caused staff members to focus on either selling that week's product or getting you out of the door as quickly as possible. It also led to them not completing the customer information on the system, as that was seen as a waste of time. In an effort to increase customer satisfaction by decreasing waiting time, the bank achieved the exact opposite. There are many more examples, some of them from healthcare and mine safety that are pretty scary.

Setting explicit targets (ideal behavior) and attempting to “close the gap” simply leads to gaming behavior and unintended consequences. In complex systems we try to measure outcome. An example would be to set a target of changing the type of stories that customers tell and how they interpret them. This cannot be gamed, as the only way to change the stories is to change your interaction with them.

5. People are not widgets, not are they ants

Systems thinking often seeks to “engineer” an ideal culture, which in essence means “engineering” people and their interactions. A symptom of this is how consultants and leaders seem to disregard the impact the constant re-structuring – moving people around as if they really are interchangeable widgets. Another is the popularity of personality assessments like Myers Briggs, which puts people in boxes. I’ve worked in environments where people were unable to relate to me because they had no idea which box I fit into. Complexity acknowledges that people have agency; that we have multiple identities that we switch between seamlessly (e.g. I can be wife, daughter, entrepreneur, friend and different identities may have different thinking patterns based on priorities). Bottom line, people aren’t cogs in a machine, nor are they ants, or birds ... although we do sometimes drive like birds flock 😊