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## Leading and managing in complex adaptive systems

Complex adaptive systems (CAS) consist of multiple, diverse components which are interconnected. The system is not fixed, but rather continually learning and changing. Organisations are certainly examples of CAS. Some of the features are outlined below.

### Boundaries shifting

Boundaries in CAS are difficult to determine, and they're often changing. Think project teams, restructures and M&A. How well do your people deal with this fluidity?

### May have memory

Change happens over time - so prior states can influence current states. The past may not equal the future, but it can present baggage that may be wanted or unwelcome. How are you leveraging this?

### May be nested

There may be cascading collections of complex systems - systems within systems. E.g. teams, departments, regions, etc. Each is its own complex system! How does decision making recognise this?

### Non-linear relationships

This is the element that often creates the angst! Seemingly insignificant events can have disproportionately large consequences. Similarly, what seemed to be important fizzles unexpectedly. This challenges the rational-linear approach that so much of a manager's activity is based on (strategy, metrics, meticulous planning etc.). How have you adapted strategy and metrics to accommodate the inevitable impact of non-linearity?

## CONQUER THE COMPLEXITY CHALLENGE - BEFORE IT CONQUERS YOU!

### *Recognising a new kind of change*

Eight out of ten CEOs in a recent IBM study anticipate significant complexity ahead. Less than half feel their organisations are prepared to handle it. They report that, "*they have never faced a learning curve so steep.*" IBM notes the 'complexity gap' poses a bigger challenge than any factor they've measured in their eight years of CEO studies.

IBM's most recent Global Chief Executive Officer Study is the fourth in this biennial series. In each of the previous three, change was identified as the most pressing challenge. In the 2010 study, complexity emerged as the top CEO concern. No doubt the perfect storm of uncertainty, ambiguity and volatility that beset the world during the GFC weighed heavily on the minds of the more than 1500 respondents.

Digging a little deeper, we realise that the new primary concern is still extremely connected to change. Pre-GFC, things were going well. It was seemingly an endless summer of growth and good fortune. Taking a close look at change didn't warrant the effort. Looking differently at change was even less of a concern. At the time, capitalising instead on growth prospects proved to be an excellent (and rewarding) strategic focus.

But then the winter struck, as if with vengeance: a sudden change, of a kind not experienced in living memory. Only a new way of looking at change could offer an explanation.

### *Enter complexity science and complexity*

Complexity science, a relatively young field, quickly assumed centre stage. Its concepts helped decision makers better understand why change had been so generally unanticipated, yet so profound. Terms including uncertainty, ambiguity, turbulence and volatility dominated our media. They influenced our thinking and impacted on our behaviour. We also became acutely aware of how inter-connected the global economy has become. It's hard to avoid taking notice when you're all so directly affected!

### *Double-trouble*

So, complexity is the new number one challenge. Good thing that's it's so closely related to change, which organisations have been grappling with for decades? So we might think, until we reflect on how badly change is handled by many organisations, even in the good times. And the bad times reinforced the point that most organisations are very far from having mastered this challenge.

Research estimates vary between 40% and 80% of all change initiatives range between failing to meet their intended objectives and failing completely. The very best case scenario then is an average 60% success rate - just over half!

We should also be concerned by the IBM findings that the 'complexity gap' is the biggest challenge identified in any of their four biennial reports. CEOs of the worst performing organisations (bottom 50% short term (1yr) and long term (4yr) growth) reported a 52% gap between expected complexity and the extent to which they felt ready to manage it.

### *The success stories*

But there were success stories too, from which we can learn. The standouts, who were in the top 50% for short and long term growth, only reported a 6% 'complexity gap'. They felt their organisations were well prepared for complexity. This group of complex-competent companies delivered revenue growth six times higher than the rest of the sample!

Researchers found three characteristics common to the complexity standouts. Firstly, they focussed on creative leadership - finding innovative ways to deal with the never-ending stream of challenges. They also attended to their customers, concentrating particularly on reinventing customer relationships. Finally, their complexity-ready organisations were faster and more flexible than the sample. That's how they turn complexity into a key competitive advantage.

### *A managerial paradigm shift is required*

One of the major challenges organisations will face is being able to adapt to deal with complexity. Up to this point, management has generally been about generating consistency and continuity. This has served organisations well. But, it means that our current workforce is not complexity-oriented. Using these tools to predict and tackle the GFC, for example, showed their inadequacy. For many, it was similar to the unfortunate victims who did not recognise that a marked receding of the shoreline is the precursor to a tsunami!

Even though we are now well into the connected knowledge age, much of our management thinking was developed for industrial economies. A characteristic of that period was relative stability, with gentle evolutionary change. Revolutionary change was the exception, rather than the norm. Now, continuous change is the norm and revolutionary change, more frequent. Some of the old managerial tools are redundant, others may be adapted. New tools (and thinking) are also required.

### *Managing in complex adaptive systems*

How familiar are you with complexity science? It's a new way of thinking about change. The field is influenced by many diverse disciplines, including biology, physical science, mathematics, neuroscience and sociology. Our sidebar takes a closer look at a few of the key concepts you'll want to use to think differently if you are to profit from complexity.