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Getting started with complexity principles

1. Google 'complexity' or 'chaos'. The two terms will present a wide range of possibilities for exploration. A non-linear approach would be to choose a link and see where it takes you.
2. Chaos Theory is incredibly interesting. A number of core concepts are usefully applied to understanding complexity in human systems. However, it might be useful to be aware that the theory developed from studying how complexity emerges from small variations in the same formula – so you ought to cast your 'complexity' net wider.
3. Another powerful set of concepts relates to systems thinking. In particular, notions connected with Complex Co-Evolving Systems have been usefully applied in explaining behaviour in organisations.
4. Finally, expand your understanding of complexity by using your developing complexity framework as a way of exploring and explaining a familiar system. For example, your team at the office, your sports club and even your family unit.

MAKE 'COMPLEXITY THINKING' A PRIORITY

A date with disaster

Take-off and landing are considered the most dangerous parts of flying. According to United Airlines pilot. Captain Meryl Getline, "take-off and landing is where all the action is." So you can imagine that the crew of QF32 probably breathed a little easier when the computer system that monitored their 'after take-off' checklist' had nothing to report.

Just as 'pilot-in-command', Captain Richard De Crespigny, was about to turn the 'seatbelts' sign off, "BOOM". An engine surge perhaps? Then, a second later, another "BOOM!" No engine surge! In fact, a boom like no other De Crespigny had ever experienced in his more than three decades of flying. Moments later the alarms and warning lights erupted, highlighting that QF32 was in very, very serious trouble.

De Crespigny has shared his account of events on the ill-fated A380, that had its engine blow up over Singapore, in a book aptly named "QF32". The real-life drama makes the book a compelling read for that reason alone. But, thanks to the detail and narrative, it is possible to extract incredibly vivid insights of the vital role complexity thinking played in the almost unbelievably positive outcome of the engine disaster.

Meaning-making is human

It's worth reflecting on the extent to which you might be using complexity principles and complexity thinking. That has a lot to do with how your brain goes about 'meaning-making'.

Meaning-making occurs in your cerebrum, the largest part of your brain. The cerebrum is responsible for higher brain functions. As with other areas of your brain, a massive amount of data processing occurs automatically. For example, vital functions of breathing, heart beat and regulating blood pressure are obviously automated. All good, you might think, but is there a cost of having your meaning-making circuitry running on auto-pilot?

Absolutely! In fact, De Crespigny marvels at the complex, automated capabilities of the A380 computer systems. Simultaneously, he warns that ultimate responsibility for aviating rests with pilots, not the computers that make the job a little easier.

In a similar way, though your brain automates many higher-order tasks, you might want to give some of its processing closer attention. For instance, most people will have been educated using a scientifically-oriented, rational-linear approach as a foundation for thinking. This approach is pervasive in how the world has been explained since the Middle Ages, including present times. Yet, while it

has certainly delivered incredible progress, this style of thinking, on its own, is no longer sufficient in explaining complex contexts.

It is likely that much of the time you automatically deploy rational-linear frameworks to make meaning of your world. When this happens, you're probably excluding non-linear explanations that actually deliver a better fit for your context. For example, when faced with a problem, do you formulate and then test your hypothesis (rational-linear approach)? Or, do you avoid an early hypothesis and rather collect a fair bit of data, which you scan for patterns and only then formulate your explanation of what's going on (complexity approach).

Complexity thinking is slowly seeping into the way people explain their contexts. Chances are you use the principles now and again, without even realising. At UGM, we believe a better way is to make a conscious effort to understand important complexity principles and then practise using that lens to make sense of your context more often. Eventually, you'll default to this powerful mode of thinking.

Let's take a closer look at one complexity principal you might apply to your own context. Even if things seem fairly easy-going, remember that people and organisations ensure that contexts are always complex. All that varies is the level of complexity.

Next-adjacent

Have you ever seen those board games where players move from one hexagon to the next? The hexagonal configuration means that there are six 'next-adjacent' options and players can rapidly move quite far from where they started. A large change can be achieved by moving in many small, manageable increments. Along the way, it's much easier to assess which direction is best for the next small step. To some extent, these smaller steps have less complexity than would be encountered if quantum leaps were being sought on each move.

In QF32, Richard De Crespigny gives many examples of how he and his team either restored or maintained a sense of order from chaos by adopting the next-adjacent approach. For example, among his vast array of personal training and experiences, were the golden rules of 'Aviate. Navigate. Communicate' which helped prioritise his best next-adjacent moves. Another was the team's rejection of the computer's 'instruction' to transfer fuel. The QF32 pilots remembered similar instructions had caused another plane to crash, when those pilots were unable to transfer the fuel back, due to systems failure. The strict, automated linear approach failed them!

Can we encourage you to adopt or refine your complexity thinking? The side-bar has a few 'next-adjacent' ideas to help move things along.