A gentle intro to Complexity thinking

for digital organisations

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Examples of what makes it Complex The Market

- Many tech-savvy hyper-connected customers constantly interacting among themselves, and with other digital products
- A vast net of competing and complementary businesses and their digital products, interconnected and interdependent
- Unpredictable and rapid escalations and knock-on effects
- The rate of change and innovation of potentially disruptive products is increasingly accelerating

Examples of what makes it Complex The Organisation

- The Human element
  - human agency, free will, spontaneity, creativity
- Deeply interconnected and interdependent
  - individuals, teams, and departments
  - its external suppliers, partners, regulators, as well as competitors
- Competing goals and incentives and limited resources and time
- Rapid turn-over, fast grow

Examples of what makes it Complex
The Requirements

- Requirements
  - volatility, continuous change, shifting goals
  - seemingly conflicting interests from multiple stakeholders
- Information
  - large amount to process with insufficient time
  - incomplete and fragmented, ambiguous
- Competing priorities, tasks fragmentation, multitasking

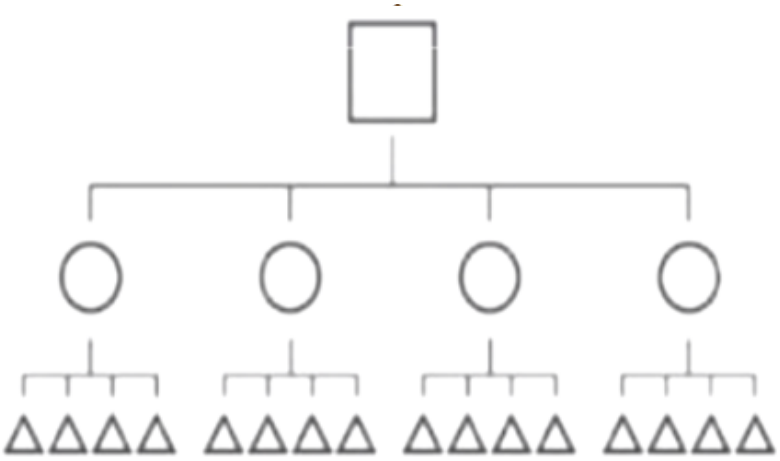
Examples of what makes it Complex The Technology

- Uncertainties and unknowns from
  - legacy systems and technical debt
  - overly complicated infrastructure and solutions
  - huge code-bases
- A large number of different systems with a vast amount of accidental dependencies and fragile integrations
- Change from a rapidly evolving eco-system of current, new and cutting-edge technologies

Why Complexity thinking?

<< The organisation as a rigidly reductionist mechanical beast is an endangered species >>

<< It takes a network to compete with a network >> - Stan McChrystal



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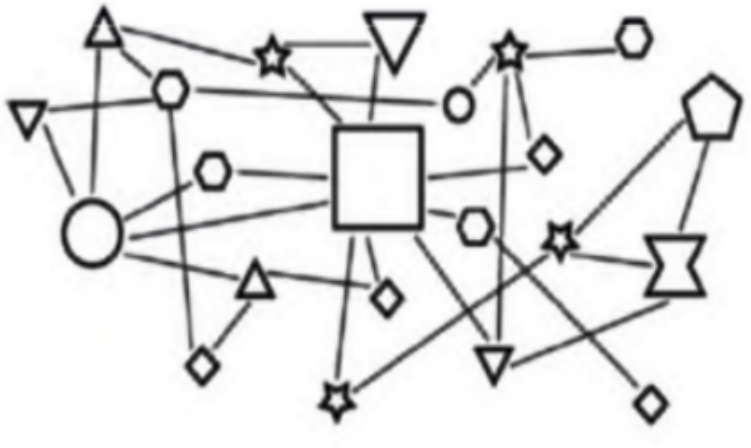
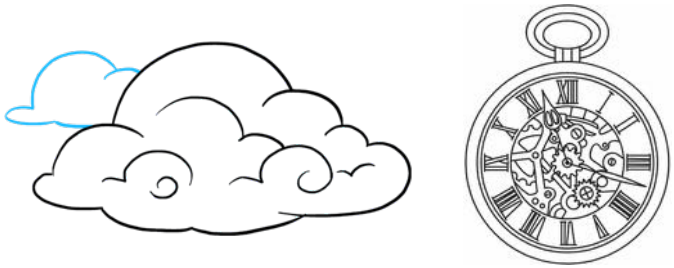


What is a Complex System?

<< *All problems are either clouds or clocks* >> - Karl Popper



To understand a clock, you can take it apart, study each piece and understand how a clock works.

But you can’t dissect a cloud. A cloud is a dynamic system; to understand it, you must study it as it is, as a whole.

Characteristics of a Complex System?

- Has many agents (e.g. people and tech components) that have
  - a network of connections (e.g. a social network) with complex interactions and feedback loops
  - memory and can assume a disposition toward something
- Has boundaries (e.g. affiliation, membership) that defines who is in
- Interacts with the outside (e.g. partners, customers, regulators, consultants)
- Has “energy” coming in (e.g. work to do) that is turned into local order (e.g. new features and products created, emergent behaviours)

What is a Human Complex Adaptive System (CAS) ?

<< We are agents who alter the unfolding of the universe >>

<< This web of life, the most complex system we know of in the universe, breaks no law of physics, yet is partially lawless, ceaselessly creative >> — Stuart A. Kauffman

Characteristics of a Human Complex Adaptive System (CAS) ?

- Agents (people)
  - can learn, self-regulate and ultimately adapt to the circumstances
  - have free will, personal needs, goals, a sense of identity
  - collaborate to make sense, decide, co-create, in parallel as part of a dynamic network, leading to emergent behaviours and outcomes
- The environment (e.g. culture, social norms, psychological safety) has a huge influence on the behaviours of the whole system
- Environment and agents co-evolve (e.g. like measurement tools and scientific progress, human society and domesticated animals)

How to manage a Human CAS? E.g.

✗	✓
✗ Don’t look at the organisation as mechanic and people as resources	✓ Look at the people and the organisation as a human system to attend to
✗ Don’t manage people	✓ Support self-organisation, align its driving forces with the purpose, create a safe-to-fail environment
✗ Don’t manage dependencies, Don’t coordinate people	✓ Foster interrelationships / interactions
✗ Don’t micromanage the work	✓ Act at the boundaries of the system, shape the environment where the work happens, sense & respond

How to manage a Human CAS? E.g.

- Shape a safe-to-fail environment and incentives that enable and orient Self-organisation: e.g. enable diversity and dissent, encourage action and experimentation and learning, share transparently information, distribute sense and decision making, unconstraint social interactions, promote collaboration

- Preserve the conditions for people to thrive

- Foster beneficial interrelationships, interactions, feedback loops. Revert detrimental ones.
  Let structures and outcomes emerge from the interactions.
  Allow change while preserving coherence of identity

- Direct and influence the emergence of behaviours, amplifying beneficial ones and reducing or reverting the detrimental ones. E.g.
  - align incentives & rewards with the purpose of the work the teams are doing
  - find the optimal granularity of the units in the system (e.g. teams, business-units)
  - regulate the quantity of the work to do, and so the pressure it creates on people

- Adopt an oblique approach to problem solving, exploit unintended consequences and secondary effects

What’s next?

Find suggested videos, articles and books for a quick and gentle introduction to Complexity thinking and CAS using the QR or the short link below.

Get in touch if you have questions or suggestions.
Or if you want to organise a brown-bag or a workshop in your organisation.

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