SOLVING COMPLEX PROBLEMS THROUGH COLLABORATION

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CONSCIOUS INCLUSION
Re-imagining the future

primeast

What makes a problem complex?

3 types of system

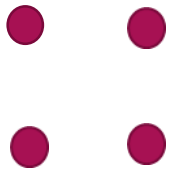
- A system is a network governed by constraints that create coherence
- An agent is anything which acts within the system (individual, group, idea etc)
- We have 3 types:
  - **Order**: fully constrained behaviour, predictable and repeatable
  - **Chaos**: random, unconstrained, difficult to create or sustain
  - **Complex**: system partially constrains behaviour, but behaviour modifies constraints

Attributes of systems

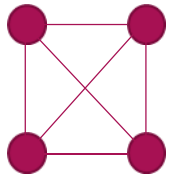
ORDERED	CHAOTIC	COMPLEX
Checklists work	No effective links	Variable links
Predictable	Crisis if accidental	Permeable container
Repeatable	If contained, good for innovation	Whole is not the sum of parts
Aggregation	Not easy to create	Real time feedback
Whole is sum of parts	Impossible to maintain	Modulation

Join the dots

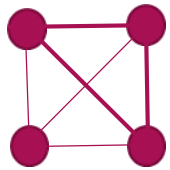
dots



links



patterns



Number of dots	Number of possible links	Possible number of patterns
N = 4	L = 6	P = 64
N = 10	L = 45	P = 35 trillion
N = 12	L = 66	P = 73.8 quintillion
	L = N(N-1)/2	$P = 2^{L}$

THE MAGIC ROUNDABOUT
Town centre
Cirencester
(A 419)
A 4289
R
R
Wroughton
Devizes
B 4289 (A 4361)

Nature of complexity

- Highly sensitive to small changes
- Granularity and fractals
- Proximity and connectivity are key
- Shift from fail-safe design to safe-to-fail experiments to avoid premature convergence
- Avoid confusing correlation with causation or simulation with prediction
- The inherent uncertainty of a complex system means we have to navigate a landscape of possibilities

Complicated vs Complex

How do we solve complex problems?

Complex problems

- No tried and tested solution
- Safe to fail not fail safe
- Small experiments to test possible solutions at low risk
- Rapid prototyping

Collaboration and diversity

- Its important to give EVERYONE a voice.
- Diversity isn’t just about gender
- Sometimes sameness is a benefit
- Experimenting with the world of possibility

Future Backwards Method

The Problem: Poverty in the UK

Divide into roughly equal groups – finding similarities

examples- age, gender, experience in the industry, height, music preferences, geography (north/south/east/west)

What is the current state?

What are the events which lead us here?

What's the best possible future? (heaven)

What's the worst possible future? (hell)

What are the steps which take us back from heaven/hell to a point in history before current state?

Future Backwords Method

Colour code

- Pink = current state
- Orange = turning points backwards from current state, heaven or hell
- Yellow = heaven or hell
- Green = accidents

Compare outputs

- What similarities are there?
- Where are the differences?
- What is the most powerful lesson?
- How do you collectively engineer success?

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