Sensemaking and Complexity

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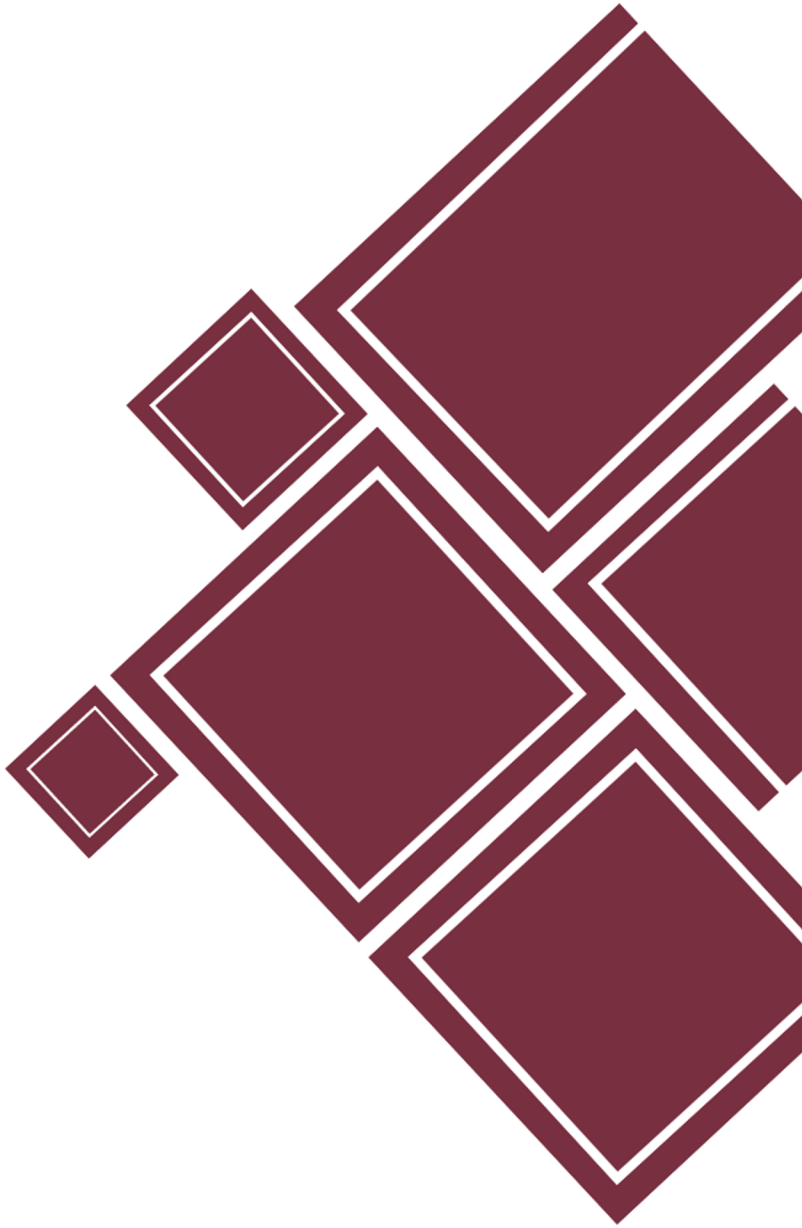
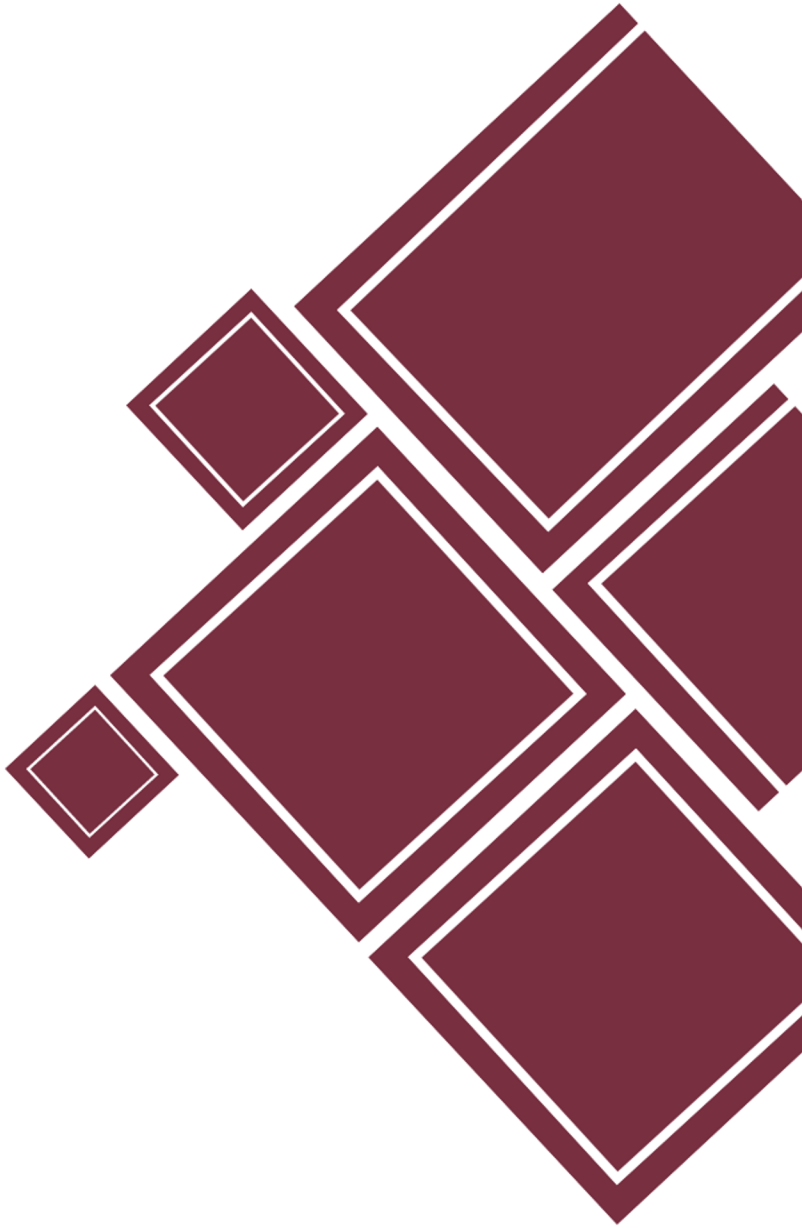
HOW WOLVES
CHANGE RIVERS

What are the characteristics of some of the complex systems that we have to deal with today?



Volatile, Uncertain, Complex and Ambiguous



Characteristics of a VUCA operating environment

Volatility: Events of unexpected occurrence and duration that disrupt systems and norms

Uncertainty: Events with unclear short-term and medium-term consequences

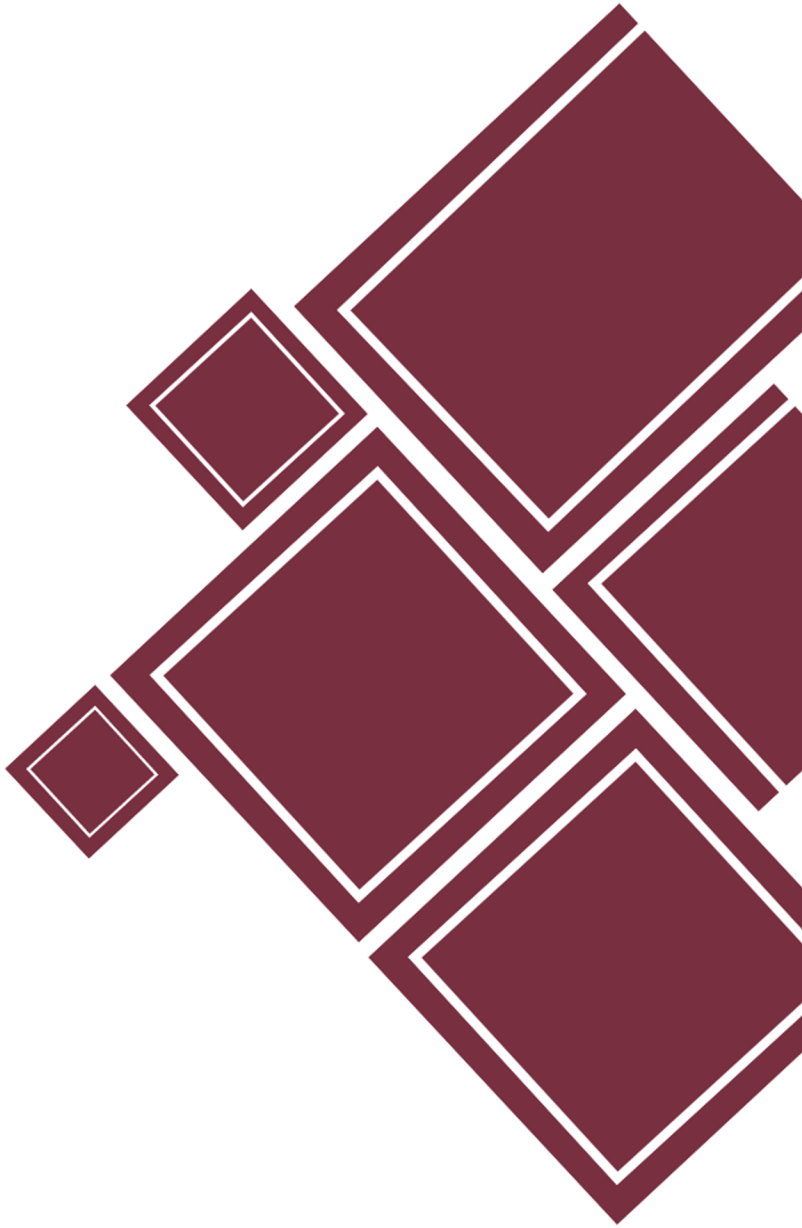
Complexity: Events and issues which features and interrelations are hard to understand

Ambiguity: Events and issues marked by contested, hidden, and inconsistent information

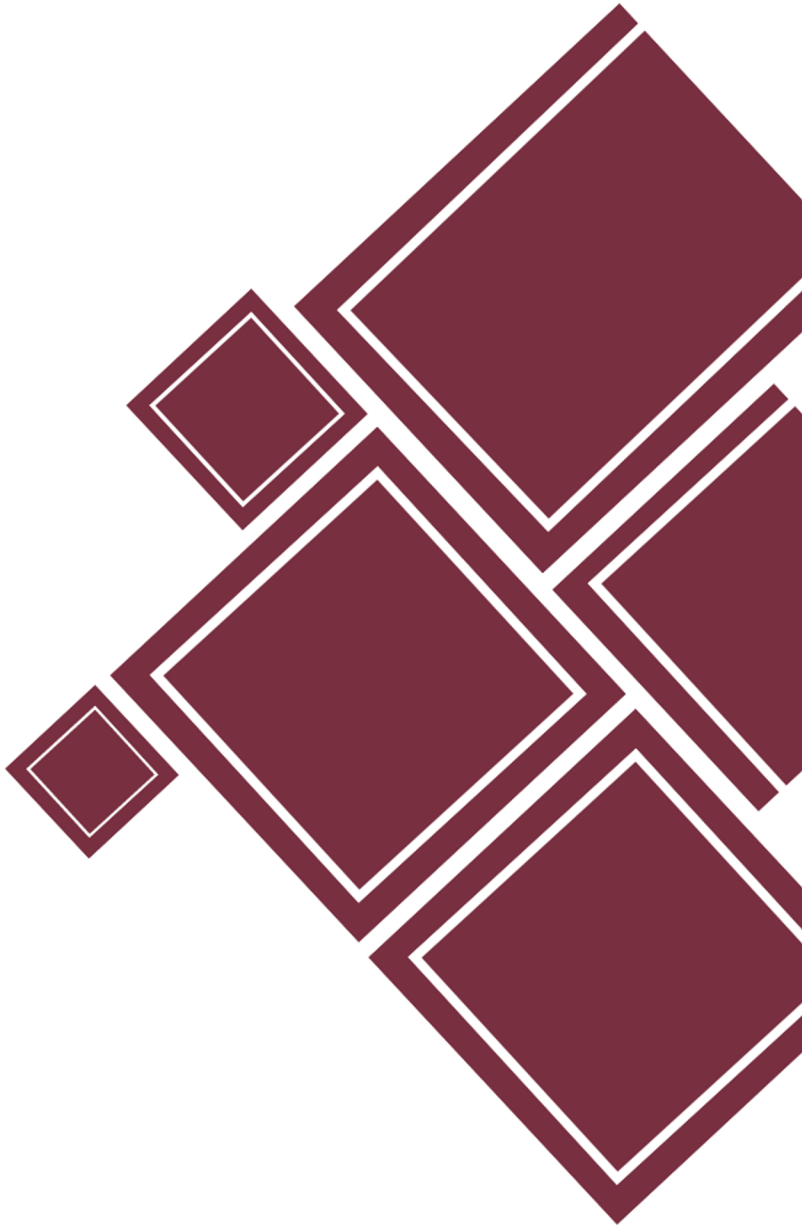
Different kinds of problems

Tame Problem	Wicked Problem	Crisis
• Clear problem definition • Single organisation • Usually an existing solution • Regular leadership	• Unclear problem definition • Multi-stakeholder • Needs innovation and learning • Adaptive leadership	• Clear problem definition • Urgently needs a new solution • Directive leadership

What kind of challenges do we face in disaster risk financing in a VUCA world?



Challenges to our Decision Making



Thinking fast and slow

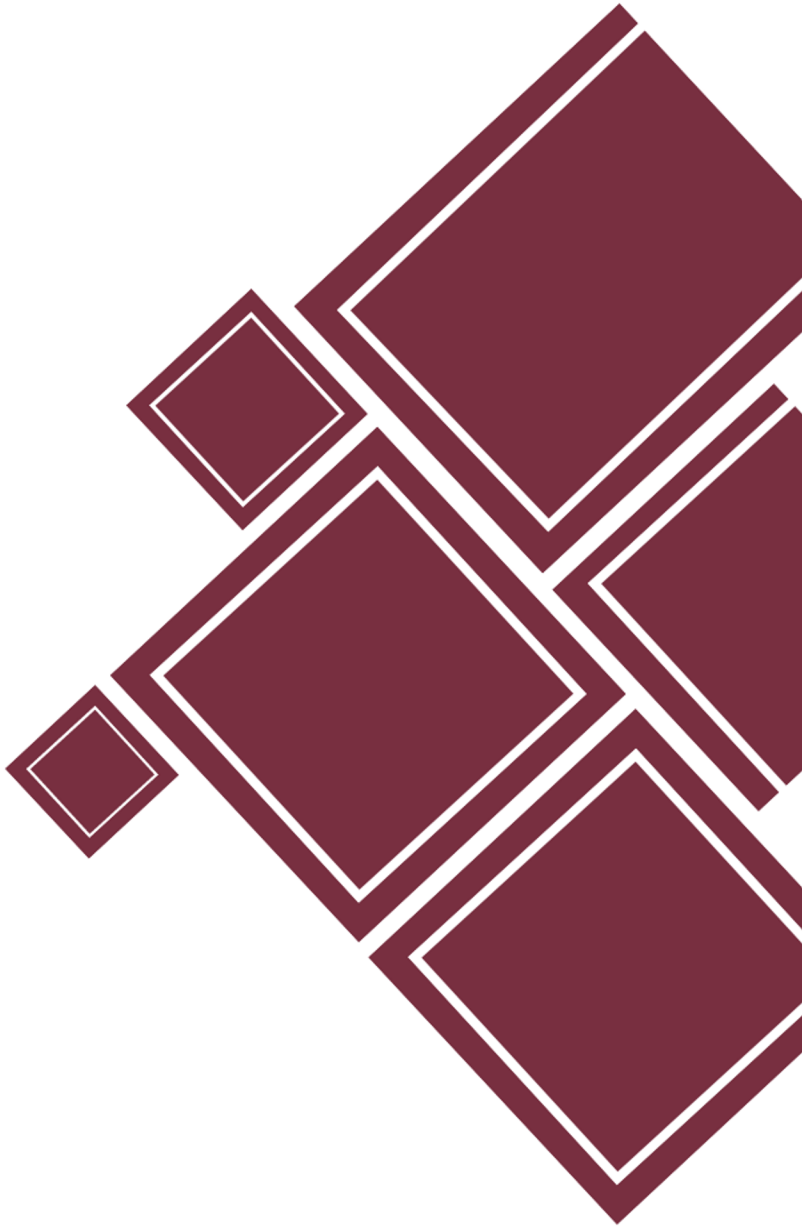
- Automatic System (fast)
  - The system of thinking we tend to use in our day-to-day activities, and when we have only a short time in which to make decisions
  - Matters that require very fast decisions
  - Controls our intuitive, automatic responses
  - Uncontrolled, effortless, associate, fast, unconscious and based on practiced skills

- Reflective System (slow)
  - The system of thinking that we taught in school, our reasoning and analysis and the rational method are based on this system
  - Controlled, effortful, deductive, slow, self-aware and rule-following

Cognitive biases about the future

Status Quo Bias	Confirmation Bias	Information Bias
• We tend to believe that happened today will happen tomorrow • The future is a linear projection of the present	• We tend to believe the data that fits our existing worldview • Contradicting information is ignored • Willful blindness	• We tend to believe that we need more information, rather than take action • Analysis paralysis

Understanding Complexity



Characteristics of Complex Systems

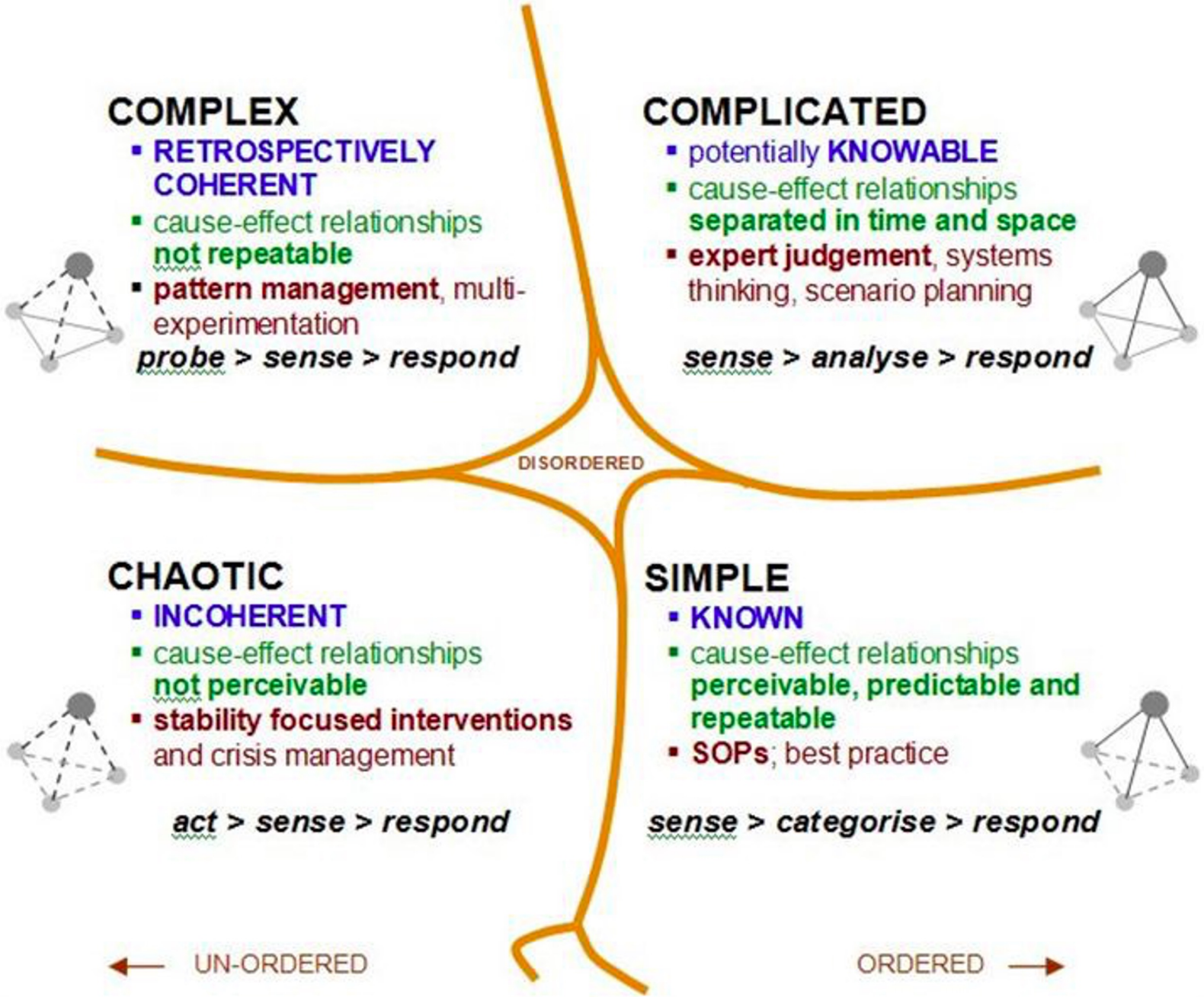
1. Complex Systems self-organise and are interdependent. Individuals interpret signals from other parts of the system and respond accordingly. While there may be rules, it is not possible to predict with 100% certainty how the individuals might respond.

1. Complex Systems evolve. Individuals in the system make choices which collectively can display emergent properties.

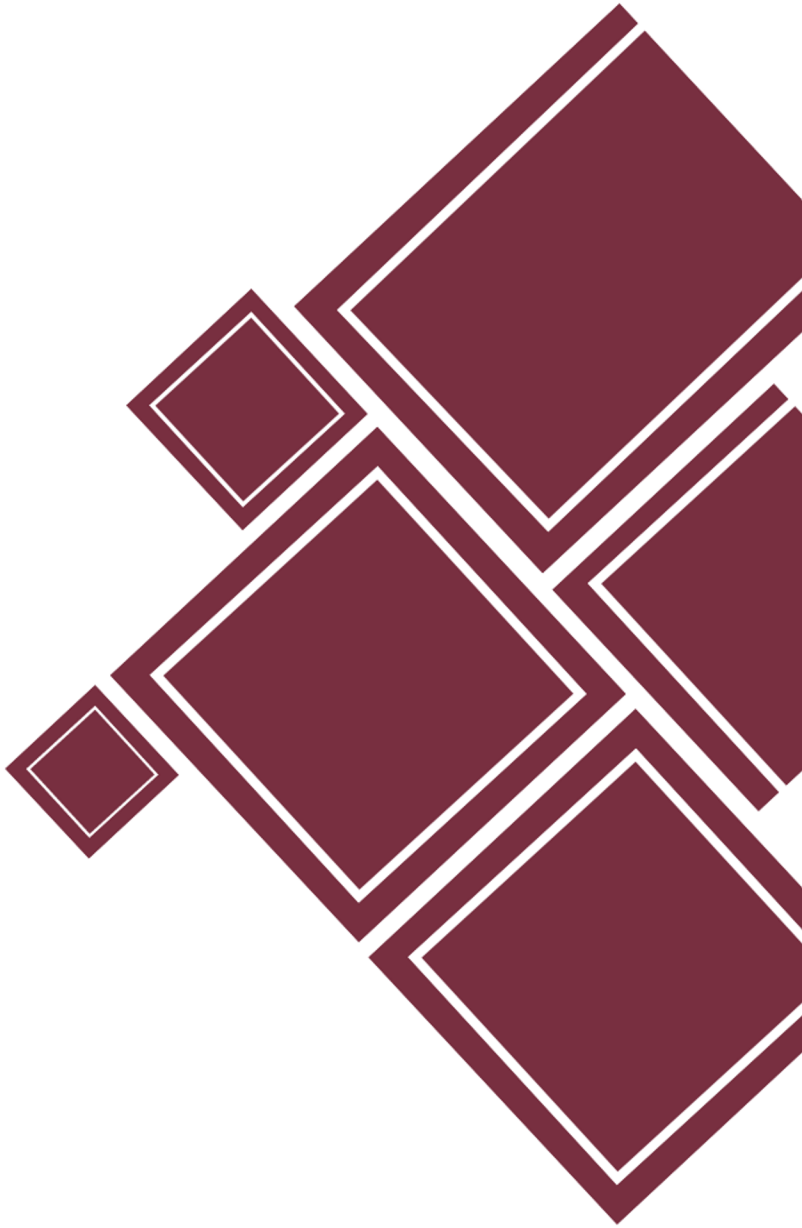
1. Complex Systems are non-linear. The collective behaviour (or outcome) of the system emerges from the non-linear interactions, cause the whole to be greater than the sum of its parts.

From Simple to Complex

SIMPLE 1960s to 1980s	**COMPLEX** 1990s onwards
• Analyse	• Probe, sense and respond
• Identify the risks and opportunities	• Create environment and experiments for innovative patterns to emerge
• Set corporate objectives	• Increase levels of interaction and communication
• Make a plan to achieve the objectives	• Generate ideas, options
• Execute the plan	• Set the right boundaries, barriers and incentives to encourage patterns to grow into coherence and general acceptance
• Sometimes call in the experts	• Risk management


COMPLEX
RETROSPECTIVELY COHERENT
cause-effect relationships not repeatable
pattern management, multi-experimentation
probe > sense > respond
COMPLICATED
potentially KNOWABLE
cause-effect relationships separated in time and space
expert judgement, systems thinking, scenario planning
sense > analyse > respond
DISORDERED
CHAOTIC
INCOHERENT
cause-effect relationships not perceivable
stability focused interventions and crisis management
act > sense > respond
SIMPLE
KNOWN
cause-effect relationships perceivable, predictable and repeatable
SOPs; best practice
sense > categorise > respond
UN-ORDERED
ORDERED

How do we better understand the complex context in the future?



H.G. WELLS

WANTED: PROFESSORS OF FORESIGHT

WHEN I was a student, half a century ago, we used to talk of the abolition of distance, because of those then comparatively recent triumphs, the telegraph, the steamship and the railway train. Some of us knew already of the possibility of radio, but nobody believed we should live to take a ticket and fly around the world. The swiftest thing upon the road was a bicycle, and television seemed a fantastic impossibility.

All my life I have seen that abolition of distance becoming more and more complete. Much of what you have heard as matter of fact tonight would have seemed fantastic when I was already a young man. And even now I am not very old. In a little while all round the earth will be a few days journey, and everybody will be potentially within sight and sound of everybody all over the planet. There will be no more distance left and little separation.

You will be able to see and talk to your friends anywhere in the world as easily and surely as you send a telegram today. So plainly are things driving in that direction, that it would be childish to argue about this or elaborate it. Before another half century has passed everybody, so to speak, will be on call next door. You cannot doubt it.

All this is wonderful – all that we have done and all that we are plainly going to do. But I want to call your attention to something still more wonderful – something that we have not done. For all practical purposes we have not even begun to think yet what we are going to do about this abolition of distance. We have let it happen to us and we are going on as though it did not matter at all. We are all of us behaving as though there were no need whatever to adapt our lives and ideas in any way to these new conditions. But, indeed, that adaptation is the most urgent need of the present time.

It seems an odd thing to me that though we have thousands and thousands of professors and hundreds of thousands of students of history working upon the records of the past, there is not a single person anywhere who makes a whole time job of estimating the future consequences of new inventions and new devices. There is not a single Professor of Foresight in the world. But why shouldn't there be? All these new things, these new inventions and new powers, come crowding along; every one is fraught with consequences, and yet it is only after something has hit us hard that we set about dealing with it.

"these new inventions and new powers come crowding along; every one is fraught with consequences, and yet it is only after something has hit us hard that we set about dealing with it"

See how unprepared our world was for the motor car. The motor car ought to have been anticipated at the beginning of the century. It was bound to come. It was bound to be cheapened and made abundant. It was bound to change our roads, take passenger and goods traffic from the railways, alter the distribution of our population, congest our towns with traffic. It was bound to make it possible for a man to commit a robbery or murder in Devonshire overnight and breakfast in London or Birmingham. Did we do anything to work out any of these consequences of the motor car before they came? We did nothing to our roads until they were chocked; we did nothing to adjust our railroads to fit in with this new element in life until they were overtaken and bankrupt; we have still to bring our police up to date with the motor bandit. That is what I mean by want of Foresight.

In the case of the motor car we have let consequence after consequence take us by surprise. Then we have tried our remedies belatedly. And exactly the same thing is happening in regard to every other improvement in locomotion and communication. We are abolishing distance, heedlessly, recklessly. Isn't it plain that we ought to have not simply one or two Professors of Foresight but whole Faculties and Departments of Foresight doing all they can to anticipate and prepare for the consequences of this gathering together, this bunching up, which is now going on, of what were once widely dispersed human relationships?

We need to organise Foresight in these matters very urgently indeed, because, you see, it is not only that men will be able to get at and see and talk to their friends anywhere; they will also be able to get at those they suppose their enemies with an equal facility. You have not had that side of progress put to you quite so vividly tonight, for various reasons.

Let me ask you how long you suppose it is before it becomes possible for men to pack up a parcel of explosives or poison gas or incendiary matter or any little thing of that sort and send it up into the air to travel to just any chosen spot in the world and drop its load. For my own part I do not think it is going to be so very long before that is practicable. Our military people still stick to guns that carry one twenty miles or so, or airplanes that must fight their way through hostile planes and gunfire, to drop whatever they do drop. But nobody believes that these things mark the extreme range of offensive activities. Air torpedoes for anywhere, bomb, gas and flame delivered wherever you like, or don't like, at any time, this is one of the manifest possibilities to which all this improvement in communication is leading – that is to say if we go on much longer without taking hold of the war problem much more courageously than we have done hitherto. Tonight we are confronted with two facts, one bad and one good; the first, which has only been hinted at, that acts of war have become hideously immediate and far reaching; and the second that the whole round world can be brought together into one brotherhood, into one communion, one closeknit freely communicating citizenship, far more easily today, than was possible with even such a little country as England a century ago.

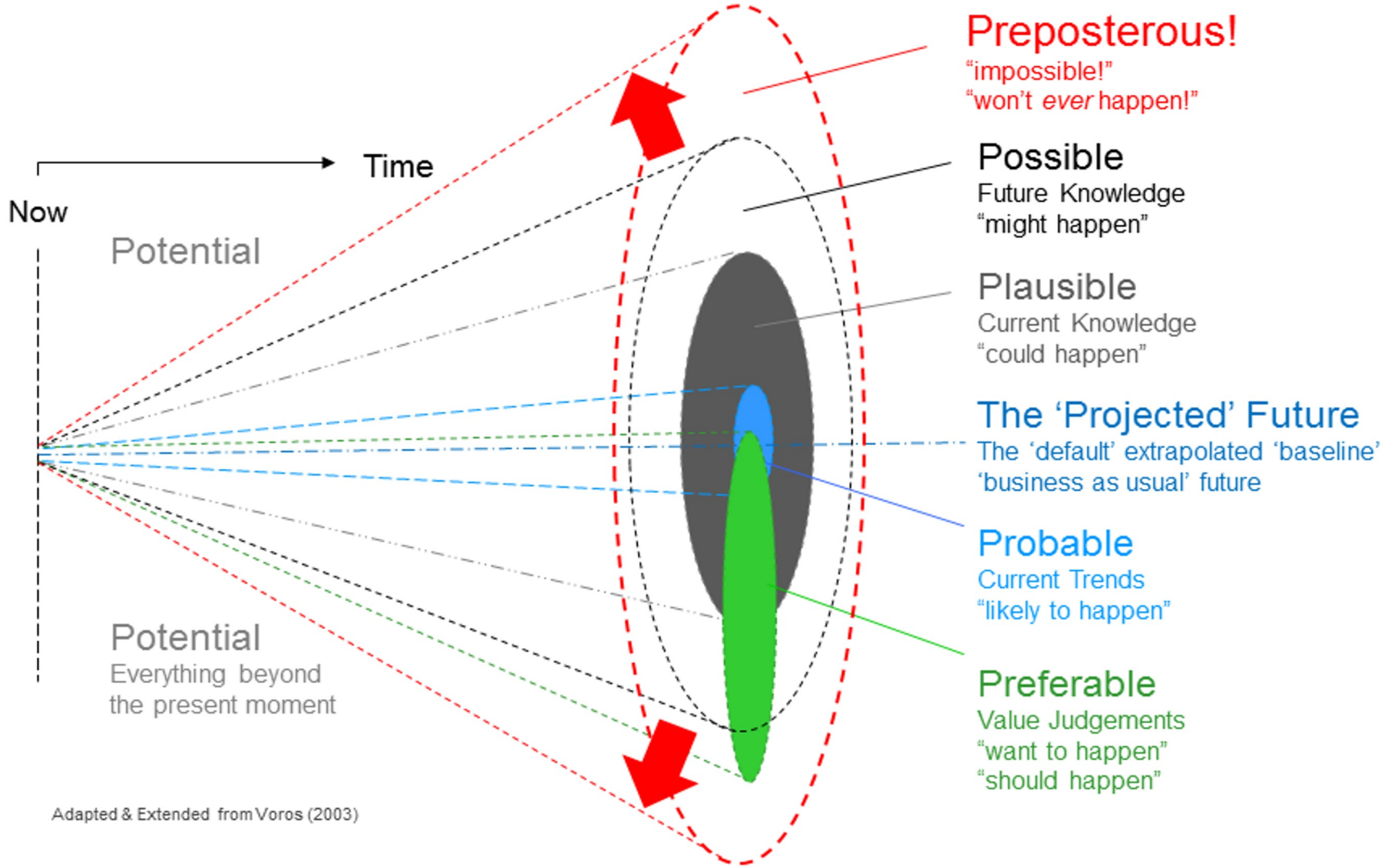
There are no Professors of Foresight as yet, but I am by way of being an amateur. Let me draw a plain conclusion from tonight's audition. Either we must make peace throughout the world, make one worldstate, one world-pax, with one money, one police, one speech and one brotherhood, however hard that task may seem, or we must prepare to live with the voice of the stranger in our ears, with the eyes of the stranger in our homes, with the knife of the stranger always at our throats, in fear and in danger of death, enemy-neighbours with the rest of our species. Distance was protection, was safety, though it meant also ignorance and indifference and a narrow, unstimulated life. For good or evil, distance has been done away with. This problem of communications rushes upon us today – it rushes upon us like Jehu the son of Nimshi. It drives furiously. And it evokes the same question: is it peace?

Because if it is not to be peace foreseen and planned and established, then it will be disaster and death. Will there be no Foresight until those bombs begin to rain upon us?

H.G. Wells.

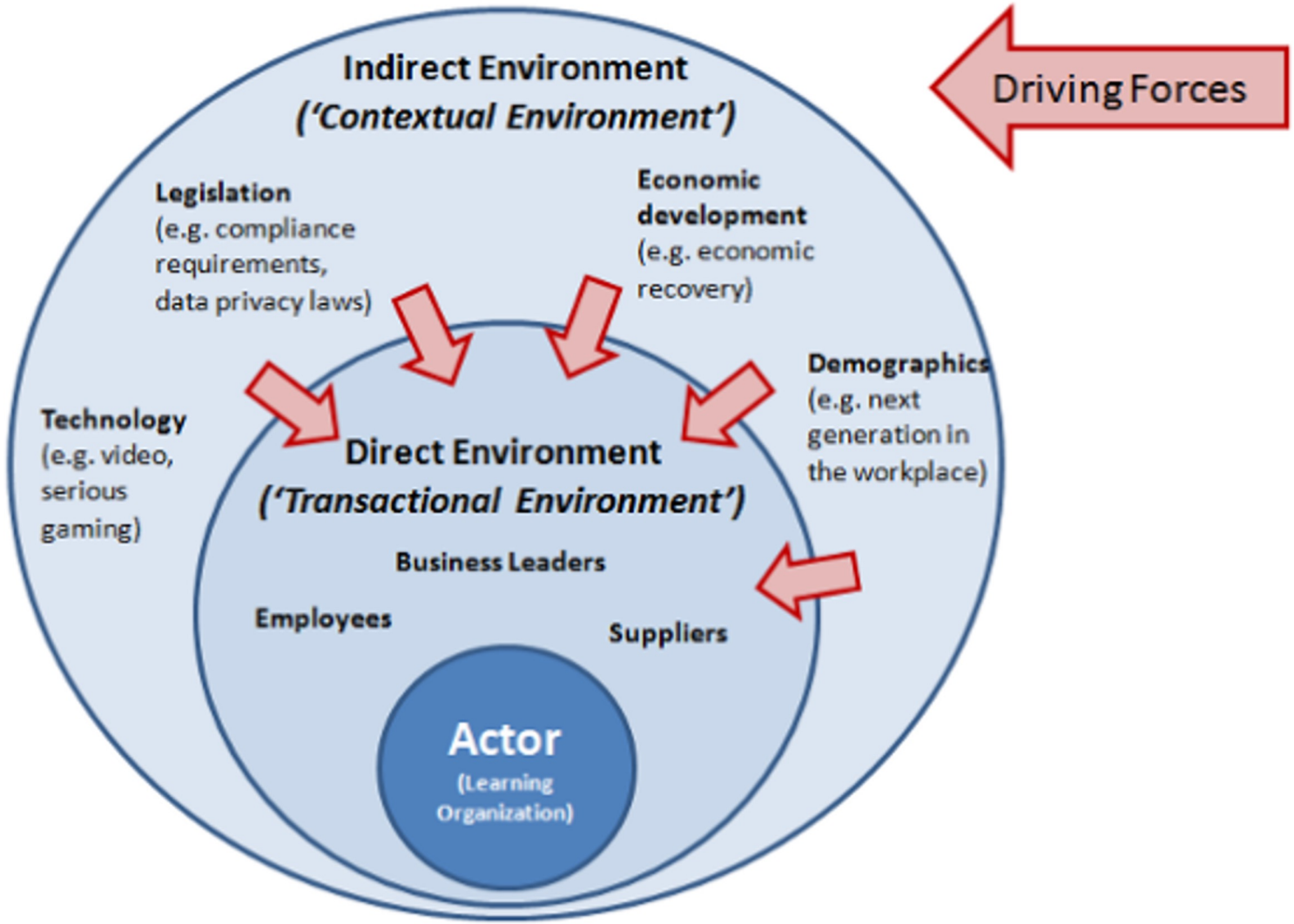
"we ought to have not simply one or two Professors of Foresight but whole Faculties and Departments of Foresight doing all they can to anticipate and prepare for the consequences of this gathering together... of what were once widely dispersed human relationships"

H. G. Wells produced many novels and works of non-fiction about the future. This piece was aired by the BBC on November 19, 1932 at the end of a radio program about communications. Though short, the essay has a powerful impact because the principle of Foresight carries greater force now than it did over half a century ago. From Slaughter, R.A. (ed); *Studying the Future*; ABA/CFF, Melbourne, 1989; pp 3 – 4.



Futures Cone - What if we were wrong?

Identifying the driving forces



WHERE WE ARE

- Human augmentation technologies are those that make humans better, either by restoring an impaired function to average levels, or by raising it beyond the norm for humans
- Examples include cognitive-enhancing drugs (nootropics), bionic limbs and eyes, genetic screening to select for desirable traits and robotic suits with industrial and military applications

WHAT WE KNOW

- With large research investments from major national and corporate players, human augmentation technologies look set to grow dramatically in efficacy and fall dramatically in price
- For example, the price for sequencing a person's genome fell from US$95 million in 2001 to just over US$1,000 in 2015, paving the way for genetic screening and selective modification in the mainstream

WHAT WE DON'T KNOW

- How will economic, political and ethical issues affect the degree of adoption of and access to human augmentation technologies?
- As new technologies overtake human capabilities, which set of human skills and traits will remain relevant in the workplace? Will skills and traits such as empathy, integrity and the ability to connect matter more?

COVID-19 Shifts

With a protracted crisis, Singapore's operating environment will change significantly. The world will be operating in a perpetual pandemic mode, and recovery will be long and challenging. Enough time would have elapsed to result in human adaptation to the COVID-19 situation in the form of new economic and social structures, rules and norms.

What might the environment look like, after a pandemic of a year or more?

Serving Suggestions

*most applicable to strategic planning units in public and people sectors

Challenge assumptions
What reactions do I have when reading the assessment: does it resonate, or do I reject it, and why? What strategies in my portfolio today will be least ready for these shifts?

Prioritise action
Which assessments are most feared, or will have the highest impact, and which render further study sooner than others?

Generate new lines of inquiry and signposts
Is there sufficient information? Should we commission a deep dive for further study? What are the uncertainties that lead up to this trajectory, and how can we monitor them as markers of change or branching points?

Signposts
These can be events, thresholds, trends or patterns. They gauge the extent to which a particular scenario has materialised, helping decision-makers update their thinking.

Check out our blog post for more on the same topic:

About Us

CSF
CENTRE FOR STRATEGIC FUTURES
Strategy Group, Prime Minister's Office

ABOUT

The Centre for Strategic Futures (CSF) was established in early 2009, and since 1 July 2015 has been part of the Strategy Group in the Prime Minister's Office. CSF serves as a focal point for futures thinking within the Singapore Government and seeks to support a Public Service that operates strategically in a complex and fast-changing environment.

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