Mastering Design in Complex Systems

ThinkPlace

System complexity

Systems expertise appreciates the multiple components: their relationships and interactions. The Cynefin model describes different classes of systems. Understanding the type of system allows the right choice of response.

Complex systems

These systems have emergent behaviour. They comprise many independent agents and display patterns of collective behaviour.

Examples:
- Traffic systems
- Health systems

Probe → Sense → Design → Act

Complicated systems

These systems have many interacting components that are completely predictable.

Examples:
- Swiss watch
- Computer code

Sense → Analyse → Design → Act

Chaotic systems

These systems are completely unpredictable and random.

Examples:
- Terrorist attack
- Natural disaster

Act → Sense → Respond

Simple systems

These systems can be easy to observe and understand.

Examples:
- Bouncing ball
- Light switch

Sense → Categorise → Act

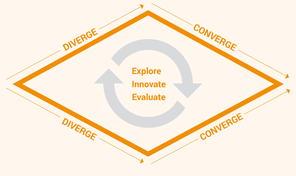
Lead and manage design

The designer is creating preferred futures therefore is optimistic.

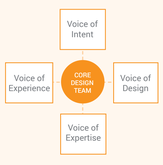
They have the conviction to keep going even when others may give up. They bring pace, energy and direction to the design process. They look to the time available and chart the best course of action.

Whilst design in complex systems is a creative process, it also is disciplined so that it reaches a solution. Central to that discipline is understanding that there is a time for divergence and a time for convergence. Divergence generates opportunities and options. Convergence evaluates them and makes decisions. Both are important.

The Design Diamond:



The Four Voices of Design:



Design in complex systems requires leadership

It is authentic, genuinely seeking to achieve the optimal outcome for all parties. A good design is not a compromise but achieves an outcome that works for all.

The designer brings nobility and humility

Nobility because they need confidence and conviction that they can tackle the world's most complex challenges. Humility because they must listen, change course, respect all voices, and be responsive.

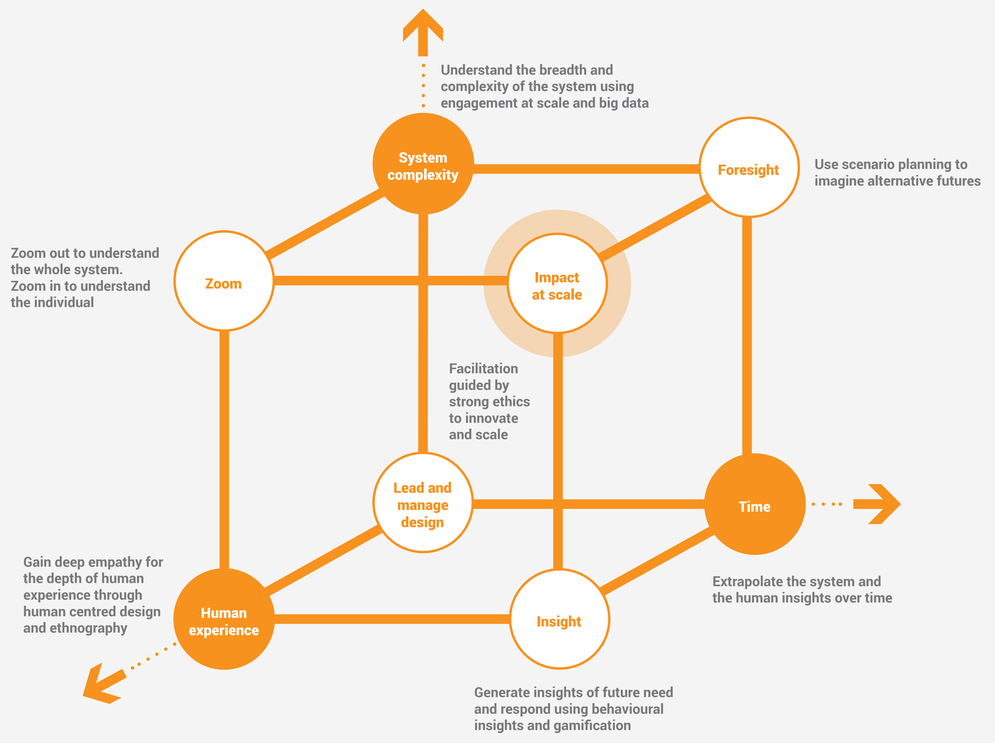
Design brings together 4 voices into a constructive collaboration – intent, experience, expertise and design

The designer brokers all voices, especially bringing the voice of the voiceless. They help everyone to reperceive the challenge and find new ways forward.

No one experiences the whole system. People experience their own pathway through it.

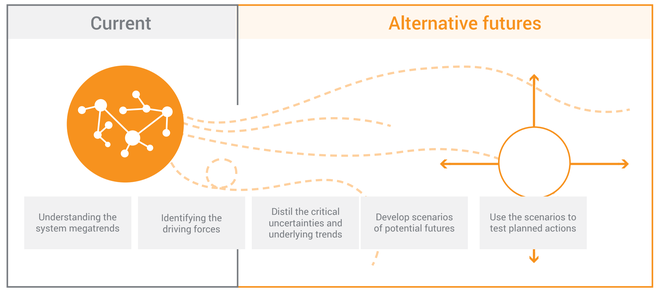
– Richard Buchanan

The Discipline of Design in Complex Systems



Foresight

Foresight is not the same as forecasting. Foresighting allows you to consider disruptive forces that could change the future. You can imagine what could happen and test your strategy accordingly.



Insight

Insights point to future opportunities. An insight is a clear, deep, and sometimes sudden understanding of a problem or situation.

- *Why was this happening?*
- *What has caused the current situation?*
- *What are the further reaching effects?*
- *What design questions does this raise?*

Impact at scale

Above all, the complex system designer recognises that every intervention they make will be experienced by someone somewhere. They have an obligation to make that the best possible experience.

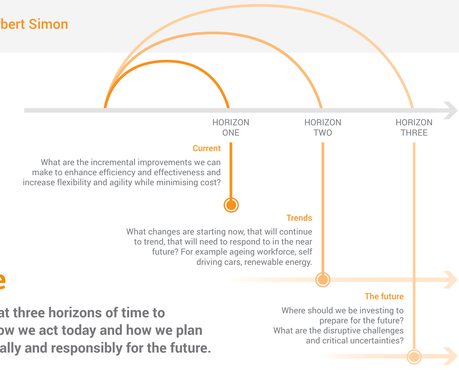
The complex system designer works with the dynamics of the system.
They:

- Appreciate the breadth of the ecosystem and its interdependent parts
- Identify critical uncertainties
- Recognise the ecosystem is dynamic, unpredictable and displays emergent properties
- Design changes that appreciate the ecosystem
- Amplify and leverage parts of the ecosystem that are naturally working well
- Identify and attenuate parts of the system working against the overall goals
- Identify a small number of high level indicators of impact and monitor them as close to real time as possible
- Constantly navigate towards the preferred future, scanning for unintended consequences

Imagine.
Vibrant communities.
Strong economies.
Sustainable environments.
Trusted institutions.

Everyone designs who devises a course of action aimed at changing an existing situation into a preferred one.

– Herbert Simon



Time

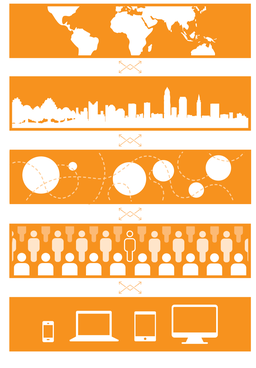
We look at three horizons of time to inform how we act today and how we plan strategically and responsibly for the future.

Zoom

Designing in complex systems requires the agility to think at many different scales in the system.

We zoom between global systems and a person's deep lived experience.We zoom up for perspective and zoom in to make sense of, and build empathy for humans interacting with the system. We observe at different fractals of zoom.

Design thinking oscillates between these different layers of the scale. Each zoom gives a different perspective of the same integrated system.



Global systems
- Geo-politics
- Economy
- Culture/society
- Knowledge
- Technology

Human and natural ecosystems
The interaction between people and the environment. Environmental systems, social and cultural systems, economic systems

Service systems
International, national, regional and local service systems

Human experience
We make sense of a problem/opportunity in one system by looking at the experience pathway through many systems

Interaction
Object and application design, technology, communication, artificial Intelligence