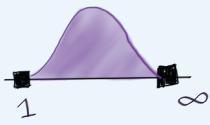
# SOME THEMES

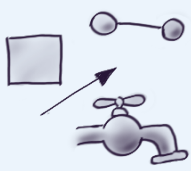
**Challenges and Good News for Designers**

## Complexity is Largest in the Middle




Traditional science and design are at ease with the small and the huge, the microscale and the macroscale, single individuals or humankind as a whole. Theories have been made understanding a single person in detail, or designing for the individual experience. And for the universal needs of people. But with complex systems, important things happen in the middle. Small groups become a level on their own, or cities between citizens and countries.

One famous rule of thumb in general systems theory, or complex systems engineering, is the law of middle numbers, a variant of the law of large numbers from statistics ('any large enough group of people will behave as the average person'). The law of middle numbers states that for inbetween sizes, the dynamics will be regular, but only for a while, and there will also be interruptions with some regularity. Examples are patterns of weather, or areas in lattice structures in crystals (see picture on the front). One challenge for designers and others is that we like to define theories as bipolar opposites: either-or, opposite end, where two nos make a yes. And become blind to what happens in the middle of the spectrum. Rossling argues how the debate about wellbeing focuses on the extreme poor and extreme rich people, and overlooks the vast improvements made in the majority in the middle of the spectrum. In mathematics, Brouwer attempted to eliminate the 'tertium non datur' principle from mathematical reasoning. As did de Bono with Po. Black-and-white thinking is useful, because it gets to conclusions quickly, but those conclusions may not be warranted. B10



## Visualisations should be Better

Creating tangible and visual representations to support idea generation, concept development, understanding, and collaboration between stakeholders has become one of the main competencies/offerings of designers. Next to the technical drawings and renderings of product design have come moodboards, collages from the arts, storyboards and character renderings from cinema and theatre, and flowcharts, journey maps, mindmaps, infographics.
The study of systems has created many specialized and general visualisations, but there is a lot that can be improved, regarding readability, richness, actionability, and diversity. Some of the visuals require a high degree of mathematical sophistication, others are general. Some seem obvious, but invite ineffective ways of thinking. S4

## Systems do not Exist - It's Framing

You can't say something **is** a system, you can only decide to **look at it as** a system; and if you do, you have to be clear about what you count as the elements, relations, purpose, boundary,... The choices you make determine how you (re) frame the system.

## Predictability Paradox - complex can be easier

With a complex system, sometimes prediction is difficult (see the Butterfly effect), on the other hand, a feedback system can 'absorb' what you do it and therefore be more predictable (see the Logistic Mapping).

## From Ballistics to Cybernetics - Forever beta

With wicked problems, complex systems, and nonlinear dynamics, our ability to predict how something we make will behave in the future becomes limited. Feedback effects kick in, the system kicks back. In these circumstances, design cannot be a finished phase which ends with a concept description to be handed over to development for implementation. Essential insights will only emerge during implementation or during use.
In these cases, design must go on after launch. When a new app comes out for your phone, it first version has very limited functionality. Then, in several weeks or months new features are added, often on the basis of ongoing use. Design stays on board and steers along.