

A systems thinking approach to crises: non-systemic interactions need to be overcome by interactions with requisite variety

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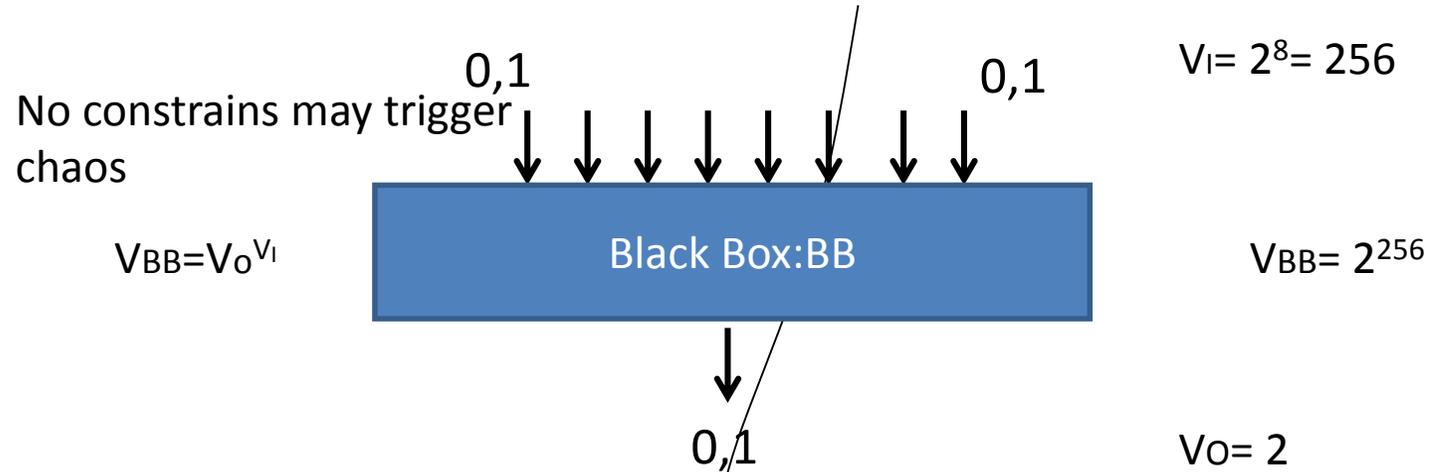
Brussels, 15<sup>th</sup> October, 2018

# Crises and Cohesion

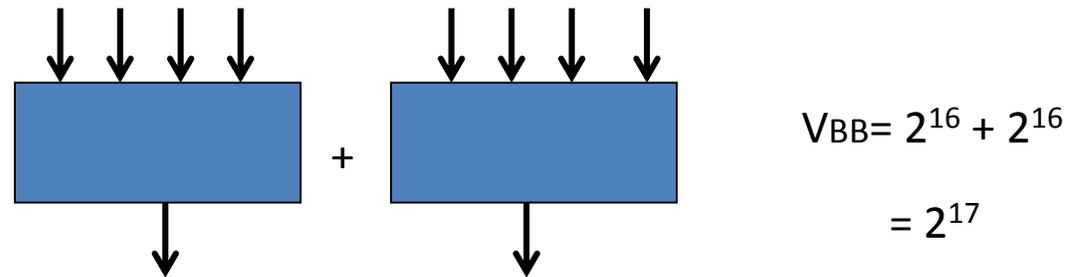
- In a crisis people experience a situation as intolerably difficult. It exceeds an organisation's management resources and coping mechanisms.
- In this contribution I'm focused on organisational systems and interactions that obstruct their cohesion. Weak systemic sensibility fails to recognise relevant organisational systems and their cohesion mechanisms. Both aspects of failure are responsible for the emergence of crises situations. I discuss these crises as outcomes of weak *agreements* among people in social situations.

# Social situations are exceedingly complex

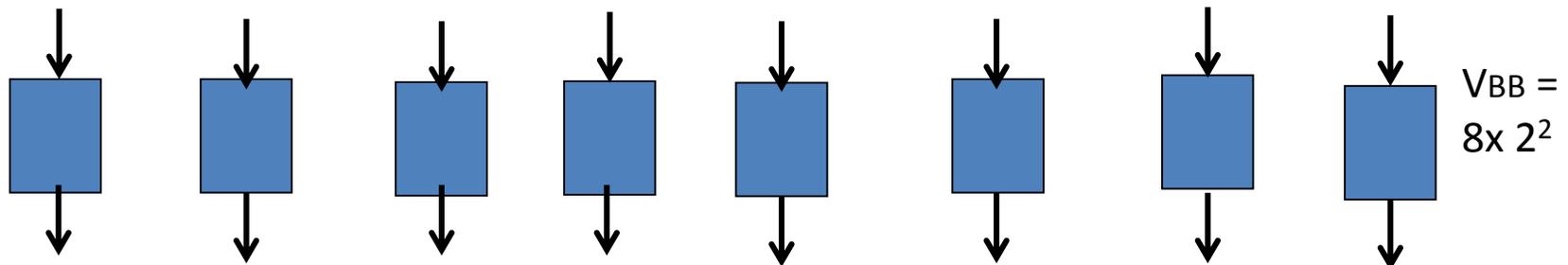
(Source Beer, 1979, p 47, 48)



Adaptation to constraint: split the Black Box in two, each with 4 inputs and one output:

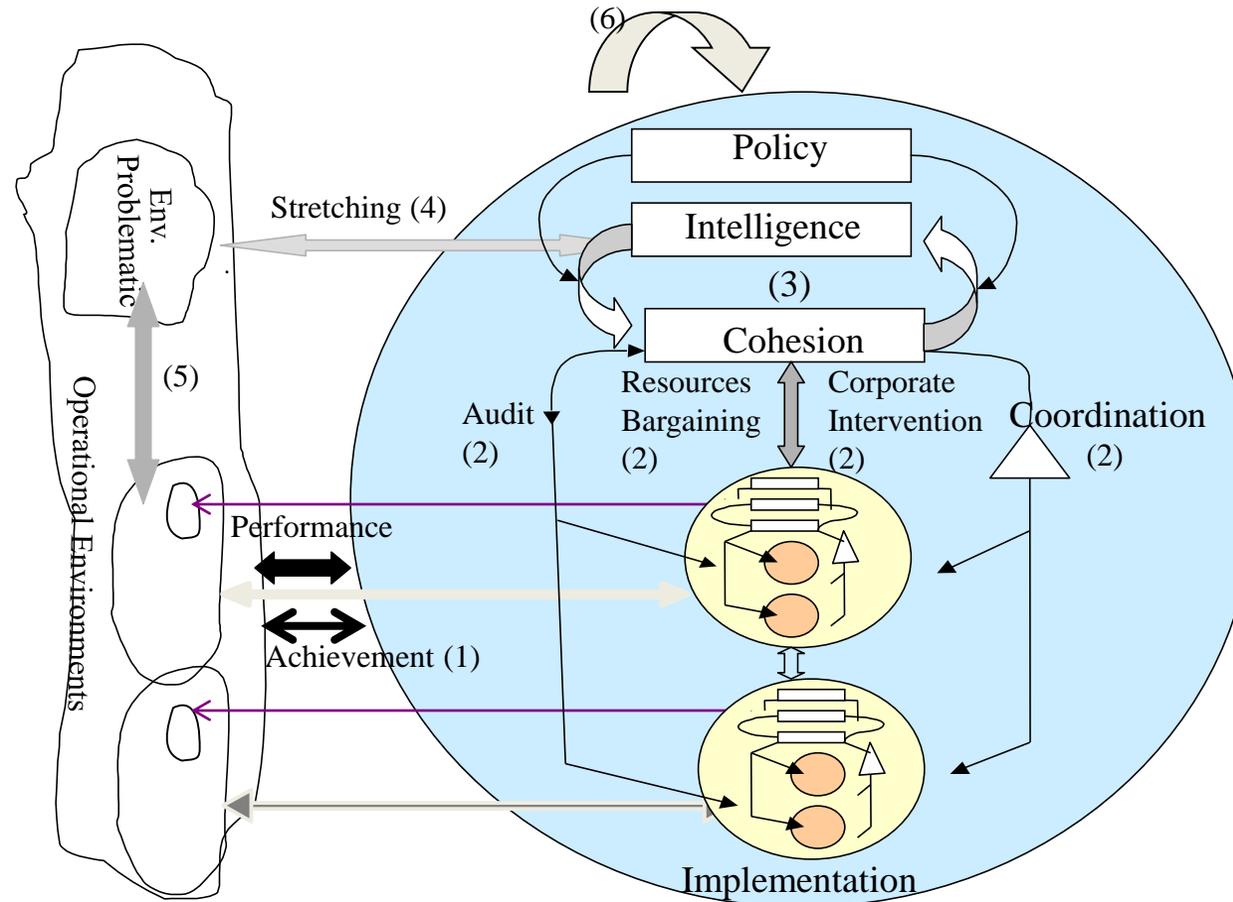


Lack of systemic sensibility: fragmentation of BB in 8 boxes, each with one input and one output



# Constraints

- Constraints in the system and the environment:
  - technology,
  - process
  - markets,
  - geography
- Ecological constraints
  - Value chains
- Contextual constraints
  - norms



# Viable System Model: Reference Model.

Adaptation of S. Beer, VSM

# Requisite Organisation

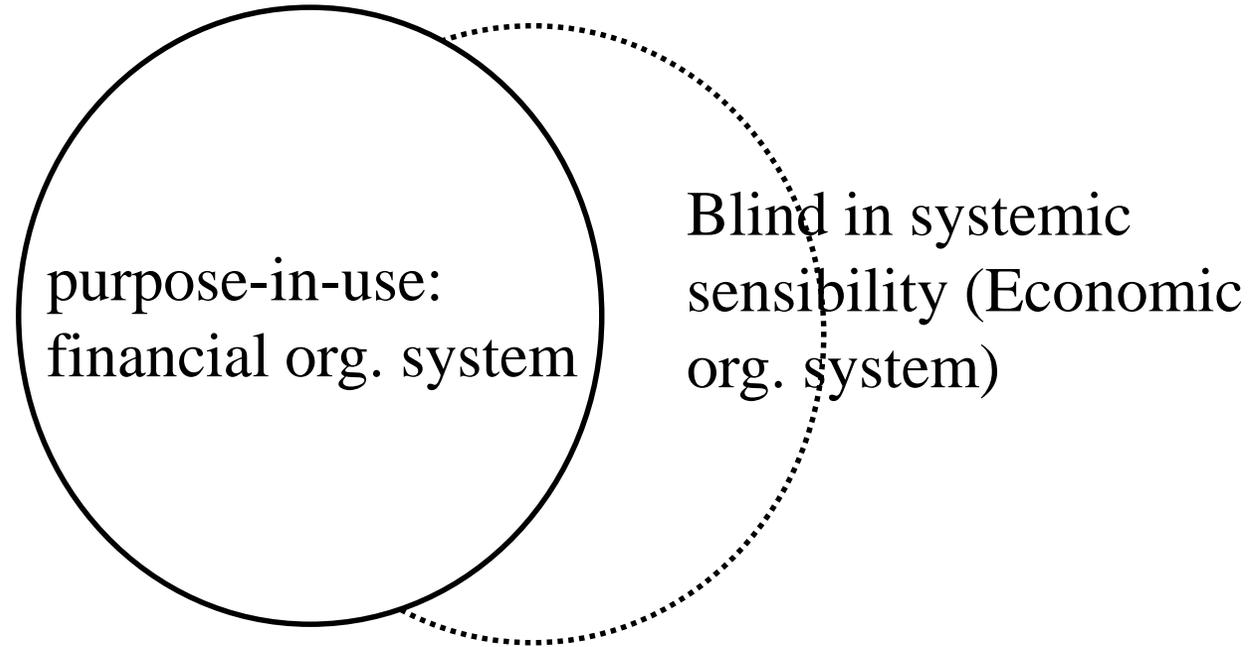
*A requisite organisation is necessary to produce desirable meanings and avoid as far as possible unintended consequences. This is an organisation in which people have systemic sensibility. It is critical to understand not only the organisation's creation of its policies (purposes and values) but also their production. The challenge is connecting meaning creation, meaning regulation and meaning production (cf. Beer's VSM).*

*It is not good enough to say that a problem is systemic, as it is usually said, it is necessary to acknowledge that the problem is the outcome of an organisational system with poor cybernetics (Espejo, 2015- Good Cybernetics is a must in policy making).*

# Systems and systemic sensibility

- Organisational systems create, produce and regulate meanings, that is, purposes and values.
- Policy makers need systemic sensibility of both the organisational systems that they create and produce.
- Unfortunately, often they are not aware of their Culpabliss errors, that is, of their culpable ignorance of consequences of their decisions. They are **Blind in Systemic Sensibility**- Beer, 1996.
- Often, policy-makers lack awareness of the cyber-systemic implications of their purposes, as is explained below for the financial system, and of the communication requirements to produce these purposes

# Blind of Systemic Sensibility: Today's Financial System



# The case of the financial crisis of 2008

- It can be argued that the financial crisis of 2008 was an outcome of poor systemic sensibility and of inadequate regulatory capabilities, which led to the unexpected defaulting of local financial institutions; the sub-prime crisis. At the most basic level, it was an instance of weak interactions between financial institutions and regulators. At a more fundamental level it was the outcome of weak interactions between financial institutions and wealth creating activities.
- These interactions were characterised by fragmented financial institutions and policy-makers and regulators lacking a systemic understanding of the exceedingly complex situation they were accountable for.

# Creation vs extraction of wealth

By failing to understand the cyber-systemics of the financial system, governments were fragmenting the economic organisational *system*; finance is a service not a primary activity of the economy. In fact it should not be an autonomous unit at all. Big banks were operating in 2008, and still are, largely weakly coupled to global, national, regional and local economic systems. A small part of their transactions is creating wealth in the economies, while the larger part is extracting wealth from people and companies (Shaxson 2018).

# Structural constraining of the economy: autonomy

- The challenge is avoiding an unfair extraction of wealth and enabling the emergence of self-organising economic units strengthened by good financial capabilities. These units should contain autonomous units also underpinned by financial capabilities (cf. above discussion about complexity).

# Strategy to manage complexity

- Economic units, striving for their viability, are walls to manage the huge complexity emerging from today's connectedness of billions of people; these should be autonomous units with high internal connectivity (i.e. cohesion) but in collaboration with their peer autonomous units (i.e. coordination). Separation of autonomous but not independent units is a sound variety management strategy.

# Towards a resilient economy

- By containing complexity through autonomous systems the strategy is adding resilience to the economic system; regulation is just that that is necessary to enable organisational systems containing autonomous systems, avoiding the fragmentation produced by independent financial systems.
- Indeed, to make financial units autonomous in the economy is fragmenting it dangerously; it is accepting the viability of financial institutions regardless of their contribution to the viability of the economic units they should serve. That was the situation in 2008 and unfortunately, it still is.

# Market economies and constraint

- Market economies often misunderstand this strategy; free for all is a strategy blind to social connectivity and therefore lacks in systemic sensibility. The financial crisis of 2008 could have been ameliorated had financial activities been contained by autonomous economic systems focused on wealth creation rather than on extracting resources for the banks' selfish enrichment.

# Lack of Systemic Sensibility

Apparently, financial regulators did not understand that being responsible for the stability of the 'financial system' implied much more than managing a Gaussian world, issuing regulations or asking for regular performance reports or making occasional audits of financial institutions. They were accountable for their interactions in a non linear Paretian systemic world. In a Paretian, systemic, world we may expect outliers (black swans) or unexpected outcomes.

# Self-organisation and Strategies for Complexity Management

Figure 1 Stylized Pareto Distribution on Log-Log Scale

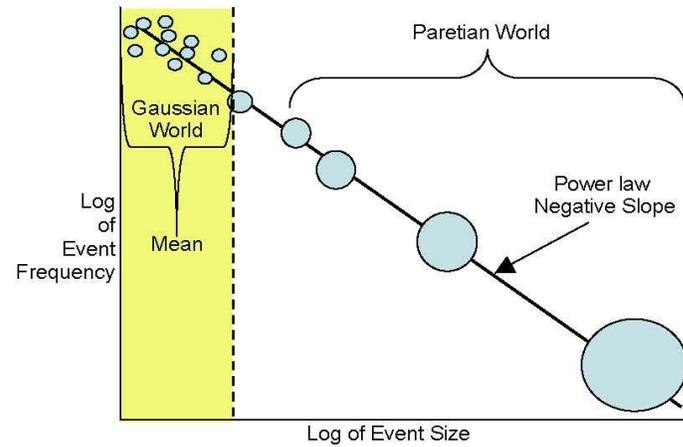


Figure 2 The Ashby Space

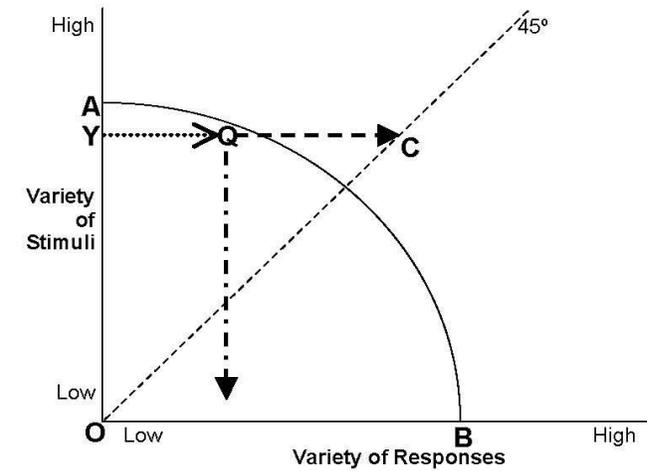


Figure 3 Three Regimes in the Ashby Space

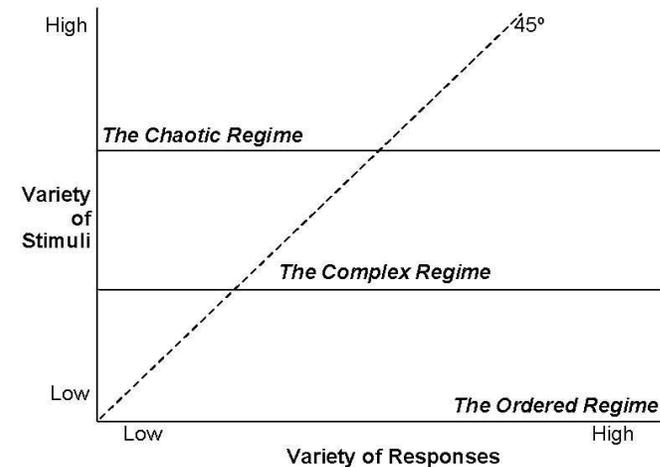
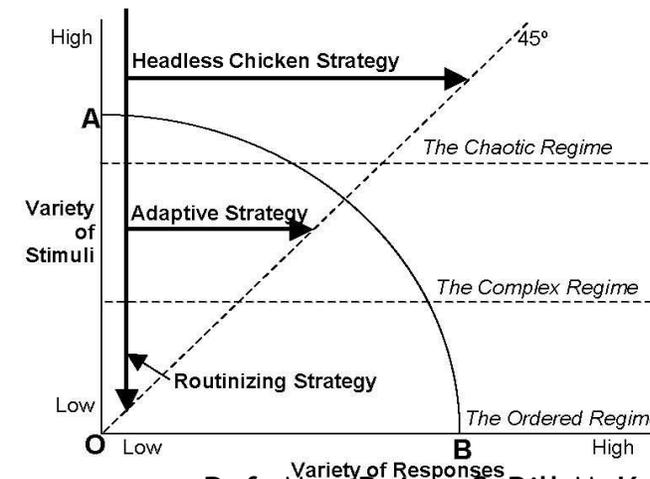
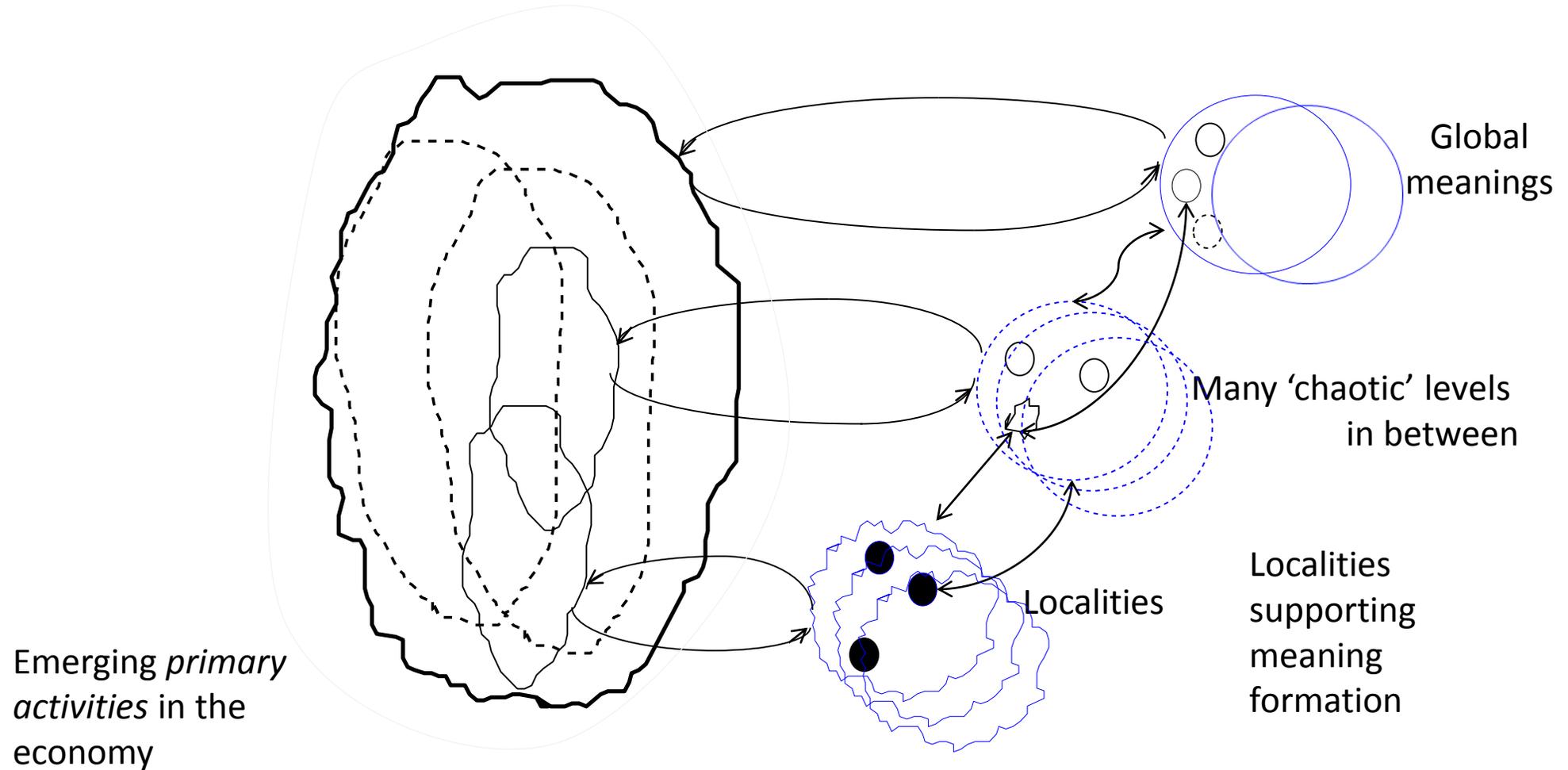


Figure 4 Three Schema Judgments in the Ashby Space



# Chaos, meanings and levels of meaningful agreements



# Ashby's Space

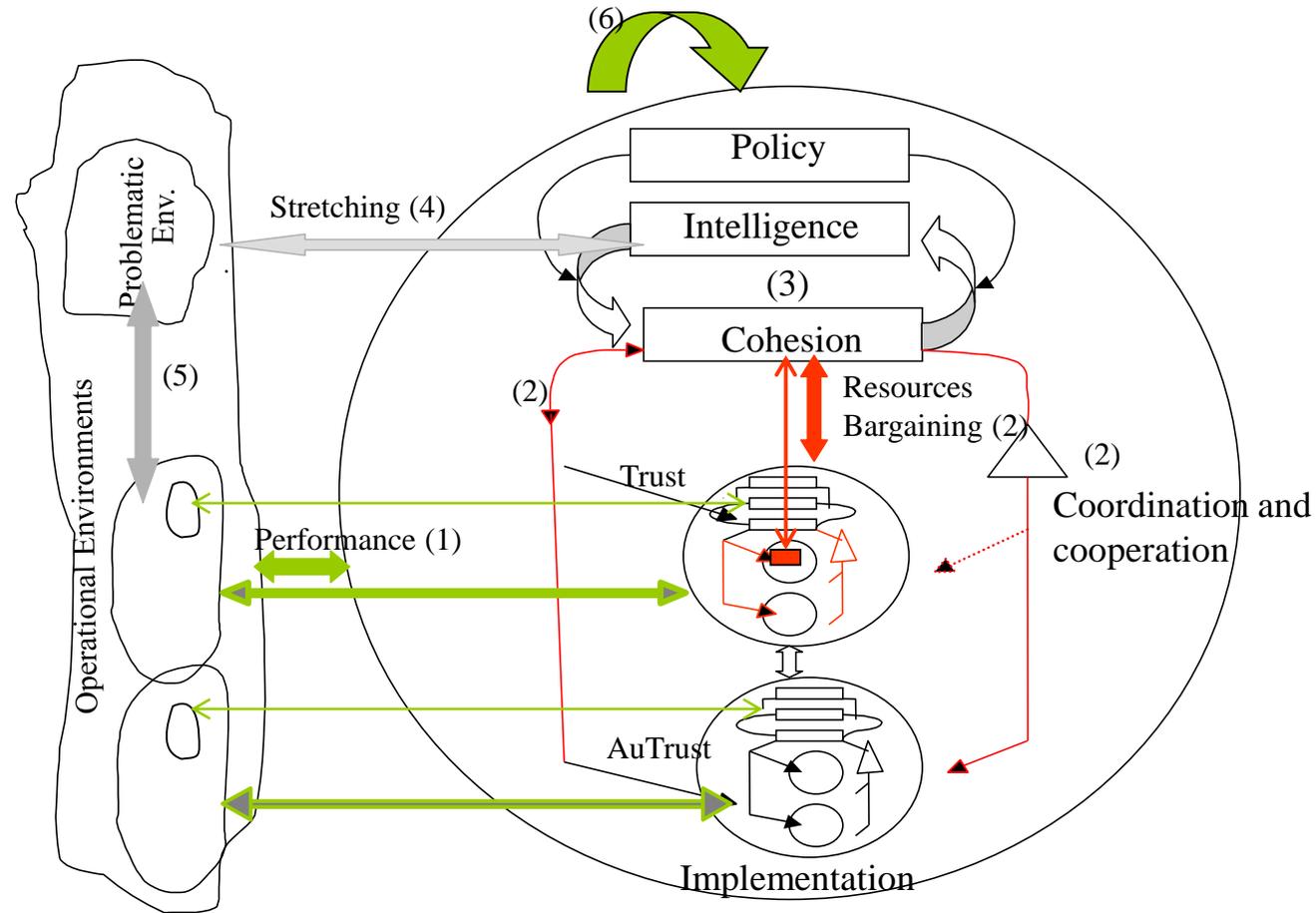
Regulators lacked requisite variety (Ashby, 1964) to maintain global financial stability; on the one hand they lacked capacity to make accountable the defaulting institutions (the banks were too big to fail, e.g. RBS), on the other they lacked a structural strategy to contain the variety of outliers within the financial services (e.g. Fannie Mae, Freddy Mac), which should have been accountable to autonomous economic units rather than to the financial system as a whole. They failed to maintain the cohesion of the economic system at multiple structural levels.

# Financial Institutions and Requisite Variety

- For some time, financial institutions found out that they could get away with products and services that appeared very profitable but were weakly accountable to economic activities and were not properly understood either by them or by the regulators; they lacked capacity to respond to black swans.
- Regulators lacked the capacity to manage financial institutions to achieve requisite variety at an acceptable level of performance. These institutions had to experience the stretching of economic activities to make the overall management of complexity more manageable

## Inclusion: organisational cohesion

One thing is to focus on the right organisational system (economic vs financial), another is to include resources and achieve requisite variety to avoid crises situations in the existing ones. At the very least, it is necessary to avoid the overall situation falling into the chaotic regime by maintaining the primary activities of the *de facto organisational financial system* in the complex regime, that is, in the regime of self-contained criticality.



Cohesion Archetypes: Unaligned Resources Bargaining, monitoring (trust) and coordination, cooperation

# Towards robust organisational systems

Whether we like it or not, banks and other financial institutions were in 2008 and are today primary activities of a financial organisational system and the challenge is how to cope with a possible new crisis. The cybernetics of the situation suggests that the organisational system needs to move in the direction of robust economic organisational systems. This is a must of good cybernetics!

# Autonomy within autonomy

While crises are likely to happen, the challenge is to contain them in limited spaces, similar to reducing the risks of a fire in a forest by creating trenches to separate chunks of the forest in areas highly interconnected within themselves and less connected with other areas. In cybernetic terms this is the recommendation of autonomous systems within autonomous systems, in a cohesive system.

# Towards distributed complexity

To operate in the complex regime rather than in the chaotic *regime* of the Ashby's space, regulators had to detect weakness in the system, make necessary changes to the organisational system and avoid the exploitation of the people by those who were more concerned with extracting wealth from them than with providing a socially acceptable economic service.

Distributed mutual stretching is a demanding communications requirement with capacity for building up collaboration and trust among the systemic actors operating at successive structural levels (Beer, 1979; Benkler, 2011).

# Relationships, learning and requisite variety

In self-organising situations, as most policy situations are, the question arises as to how to sense and correct imbalances of variety in the interactions among organisational actors and between them and environmental agents to produce desirable agreements and relationships that, through learning, improve the cybernetics of an emerging organisational system. This is necessary to overcome blindness in systemic sensibility and increase the capacity to respond to outliers, that is, to crises situations.

# Local vs Global Self-organisation

Today at the very least it is necessary to achieve requisite variety in the interactions between financial institutions and its regulators by correcting imbalances in their varieties (Espejo and Foss, 2018). However, if financial and economic activities do not have the benefit of checks and balances between them, the residual variety left for the attention of regulators is too big. There is no room for local self-organisation; the system is dominated by centralisation and global self-organisation. Unfortunately this is not good for society. It seems that the opportunity for a fundamental change of the financial system in 2008 was missed...

Thank you