

Mapping solutions and problems in a turbulent world

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Abstract

This paper develops a complex systems viewpoint of problems and their solutions and develops tools that indicate and shed light on the process of solution building. The world is a complex open system where the future is uncertain, emergent and unpredictable. This emergence and uncertainty about circumstances and the future makes decision making difficult and problematic. This is usually overcome by making a set of assumptions and modelling the world, or at least the part under consideration, as if it were closed with respect to this set. Many problems arise when this process is flawed.

This paper develops a solution / problem diagram with axes of knowledge certainty and uses this to formulate a classification of problem types and their associated solution types. It also shows how this can be useful in pinpointing certain systematic flaws in solutions and in formulating strategies to deal with them and then shows how this relates to the underlying assumptions made when adopting a solution. The analysis of assumptions is categorised in terms of the three levels of a complex system and draws attention to a common pathological set of three assumptions.

The boundaries within the solution / problem diagram are themselves not certain and form the area where 'turbulence' can set in both in the environment. This paper develops a definition and indicator for this type of system turbulence that can be used to show when it the transition from one type of solution / problem area to another needs to be made.

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