

Systems Thinking for Foggy Situations

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Systems Thinking is where real world situations are treated as systems to learn more about them. Treating situations as systems provides a viewpoint to explore the situation in a subtly different but powerful way, hereby affording insight and understanding that would remain hidden by traditional reductionist approaches. The beauty of Systems Thinking lies with its universality; it can be applied to anything, anywhere and at any time, effectively allowing the thinker to compare chalk with cheese. This can permit learning in one domain to be transferred to another. It allows for the comparison of different systems to gain insight and understanding of generic issues and behaviour.

In consequence, Systems Thinking is seen as the approach to handling the complexity and risks associated with business and organizational problems and opportunities in the modern world. The adoption of Systems Thinking provides a very powerful framework for understanding complex situations and issues' leading ultimately to their elucidation or resolution. Its applicability is universal, from designing a new product or service through to root cause analysis of problems, managing transformation and change and the exploration and evolution of future strategies.

How Systems Thinking is applied is situation or context sensitive but it is possible to provide guidance and a set of tools to help the "systems thinker" put the principles and concepts into practice. A useful model here comes from Eddy Obeng [1] who developed the model to talk about project types, but it can be extended to talk about situation types. Figure 1 shows four basic situations in terms of knowledge of what has to be done against how to do it.

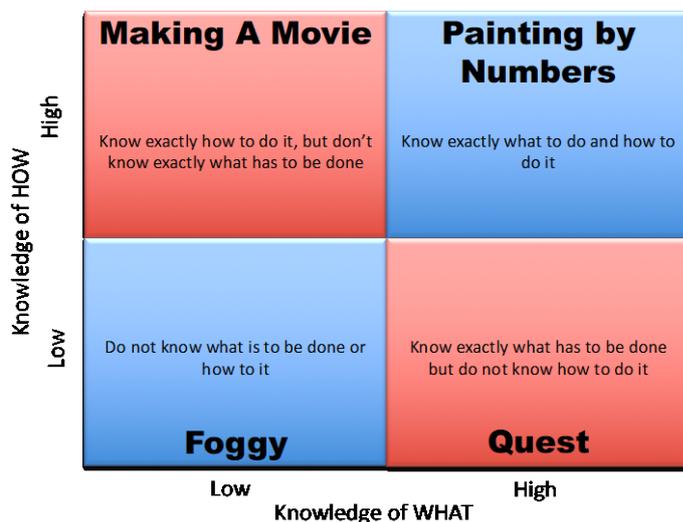


Figure1: The Four Types of Situation (after Eddy Obeng)

The four situations are:

- **Painting by numbers:** These are situations where what has to be done and we know how to do it is clearly known. It's just a question of following the recipe and the solution will emerge.
- **Quest:** These are situations where what has to be done is known precisely but there is no knowledge of how to do it. The classic example of the quest is Kennedy's "before this decade is out, of landing a man on the Moon and returning him safely". Absolutely crystal clear what had to be done, but how?

- **Making a movie:** This type of situation is one where how to do it is known because it has been done many times before, but there is a lack of clarity on what has to be done. While making a movie is a good metaphor, there are many others such as building architecture: humankind has been designing and constructing buildings for thousands of years, yet each is often unique.
- **Foggy:** This situation is where we don't know what to do or how to do it.

Underlying practical Systems Thinking is a fundamental approach to discovery and exploration through Divergent and Convergent Thinking [1].

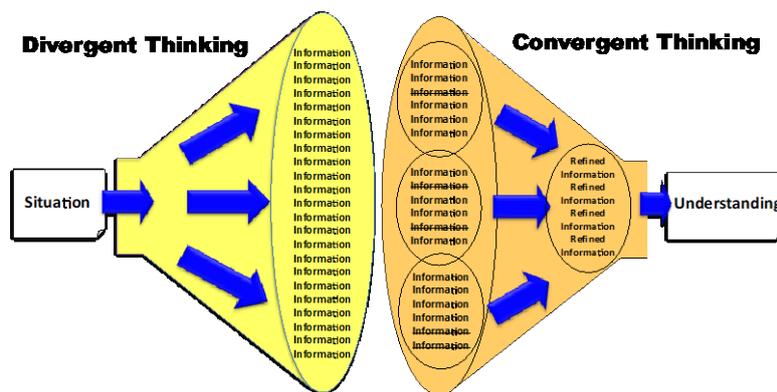


Figure 1: Divergent and Convergent Thinking

Divergent Thinking typically occurs in a spontaneous, free-flowing manner, where many creative ideas are generated. Multiple possible causes, factors or solutions are identified, explored and evaluated in a short amount of time, and unexpected connections are identified and captured. While Divergent Thinking is used to create choice, Convergent Thinking is used to organize and select.

The Divergent and Convergent thinking process or approach is the bedrock of Systems Thinking. Whenever we attempt to understand a complex situation, the starting point is to generate, gather, create information first – then, and only then, organize the information that is pertinent. This approach overrides premature evaluation before the options are explored.

Tools are critical to Systems Thinking as they provide a framework to encourage the divergent or convergent thinking at the right time in the right place. They provide structure to the thinking process. Tools also allow for the sharing of knowledge and understanding from multiple perspectives. Tools also generate the defensible evidence that supports any arguments we create and build as a consequence of Systems Thinking. The use of recognised and proven tools adds to the professionalism of the individual or team using the tool.

Tools are an important part of Systems Thinking as they help:

- paint the big picture
- capture and codify disparate viewpoints
- unmask the hidden patterns
- expose the natural and germane structure

Typically, Systems Thinking tools are diagram-based because words alone are too linear and cannot display structure in a meaningful way. The tools help build representations or models of the real-world situation in the systems world, which can be explored to gain the insight or understanding that is sought and then transfer that learning back into the real world.

There are a large number of Systems Thinking Tools to draw upon and a key skill of a Systems Thinker is the selection of the most appropriate tool for a particular situation. There is potentially an infinite number of possible situations to which Systems Thinking can be applied, the definition of an all-encompassing process that describes which tool to use when is not only impossible but also undesirable. However, an understanding of the situation type can provide both an overall approach and suggest suitable tools.

Foggy situations typically require multiple applications of the divergent-convergent thinking process. The first, and perhaps the most important, is the Big Picture World view which is a “birds eye” or “helicopter view” to allow all the stakeholders to express and capture their thoughts and understanding. This Big Picture world view can subsequently be explored to find potential prospects for further investigation. Each of these potential prospects is subject to a further divergent-convergent process to explore in more detail and with greater clarity the selected aspect of the Big Picture. This refinement process can be repeated multiple times as necessary. Pictorially, this is shown in figure 3.

To help undertake the repeated Divergent-Convergent stages to address foggy situations a number of Systems Thinking tools are applicable. These are shown pictorially as a “Tool Map” in figure 4. Similar Diagrams exist for the other three quadrants of the situation model shown in figure 1. Figure 4 shows the Big World – Detailed World process in terms of the tools that can be used to assist the systems thinker. What is important to note about figure 4, is that there is choice over the use of tools. Indeed, the blind application of the tools by rote is a “road to nowhere”.

The Big Picture World view is typically initiated by the construction of a Stakeholder Influence Map to determine the key situation stakeholders. Alternatively, a Rich Picture is constructed to capture the views of a group of stakeholders about the situation under investigation. The Stakeholder Influence Map route typically uses divergent thinking tools such as Affinity Diagrams or Spray Diagrams to generate information about the situation from a particular stakeholder viewpoint. Convergence is achieved through the use of a Multiple Cause Diagram.

It is the outputs of these various tools that are explored to find potential prospects for further detailed investigation. This Big Picture World view very much aligns with Checkland’s Soft Systems approach [3] but offers a number of alternative tools.

The Detailed Picture World view comprises a more focused divergent-convergent process to investigate the specific prospects extracted from the big picture view. The aim of these more detailed explorations is to gain understanding and also to identify potential change(s). The tools are more resolute and rigid and provide a great clarity of understanding of a particular aspect of the big picture. Moreover, they strive to direct change.

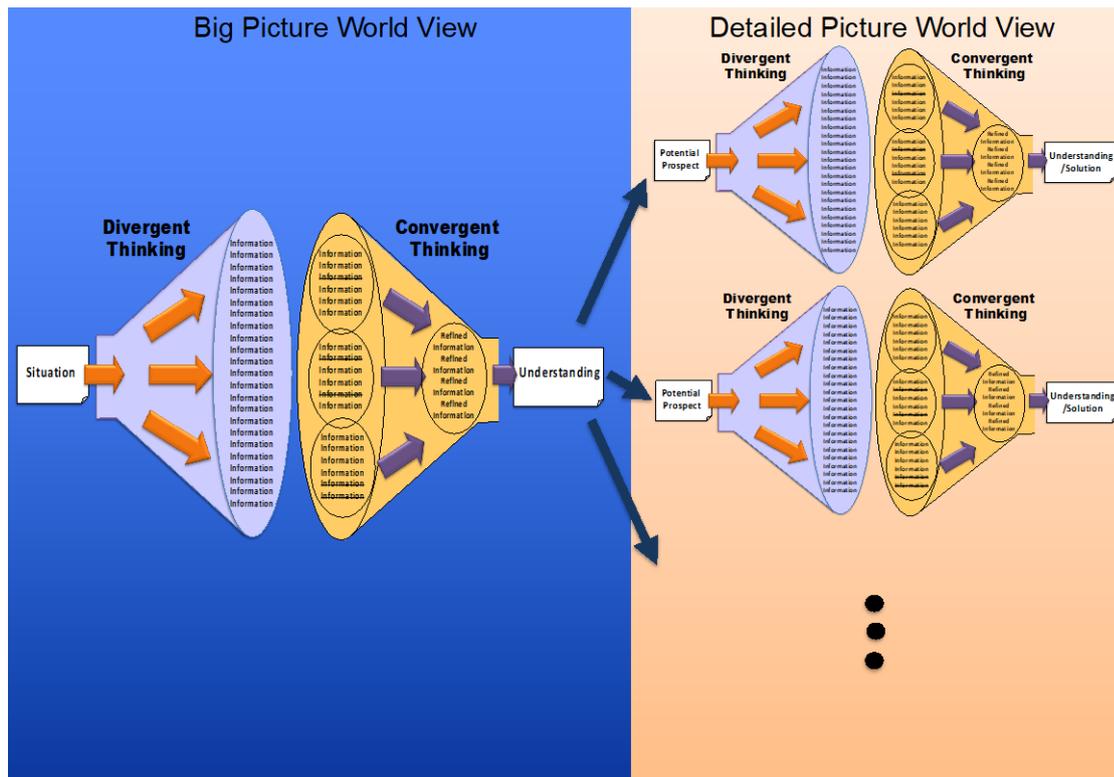


Figure 3: Repeated Divergent-Convergent stages to address foggy situations

In the Detailed Picture World, the emphasis is on understanding the purpose and context of the activity or transformation that sits within the prospect. This understanding allows and informs to the building logical models to determine what necessarily has to happen – the functions or sub-purposes - to achieve the purpose. Here there are a variety of tools such a Conceptual Model or a Systems Map or Functional Flow Diagram that can be used. What is being exposed here is a profound and logically defensible understand of the actions that must occur to achieve the purpose. We are understanding what has to be done before deciding how to do it. Again, this approach avoids “jumping to a solution” to early and allows the exploration of alternatives. For each identified function or activity there will be choice, and the approach is to determine these first and then select amongst them. The usual approach is to develop a number of candidate conceptual solutions that can be evaluated to make recommendation for change.

References

- [1] Obeng E 'All Change: the Project Managers Secret Handbook' 1996, Financial Times Pearson Publishing ISBN 0 273 60762 6
- [2] J. P. Guilford (November 1968). "The Nature of Human Intelligence". *Science*. New York: McGraw-Hill.
- [3] Checkland P. Systems Thinking, Systems Practice, 1999, Wiley, ISBN 0-471-98606-2

