Systems Thinking method as TD Research Method

Strengthening Research & Educational Competences of HEIs for Gender Sensitive InfoRmal Settlement Transformation- GIRT
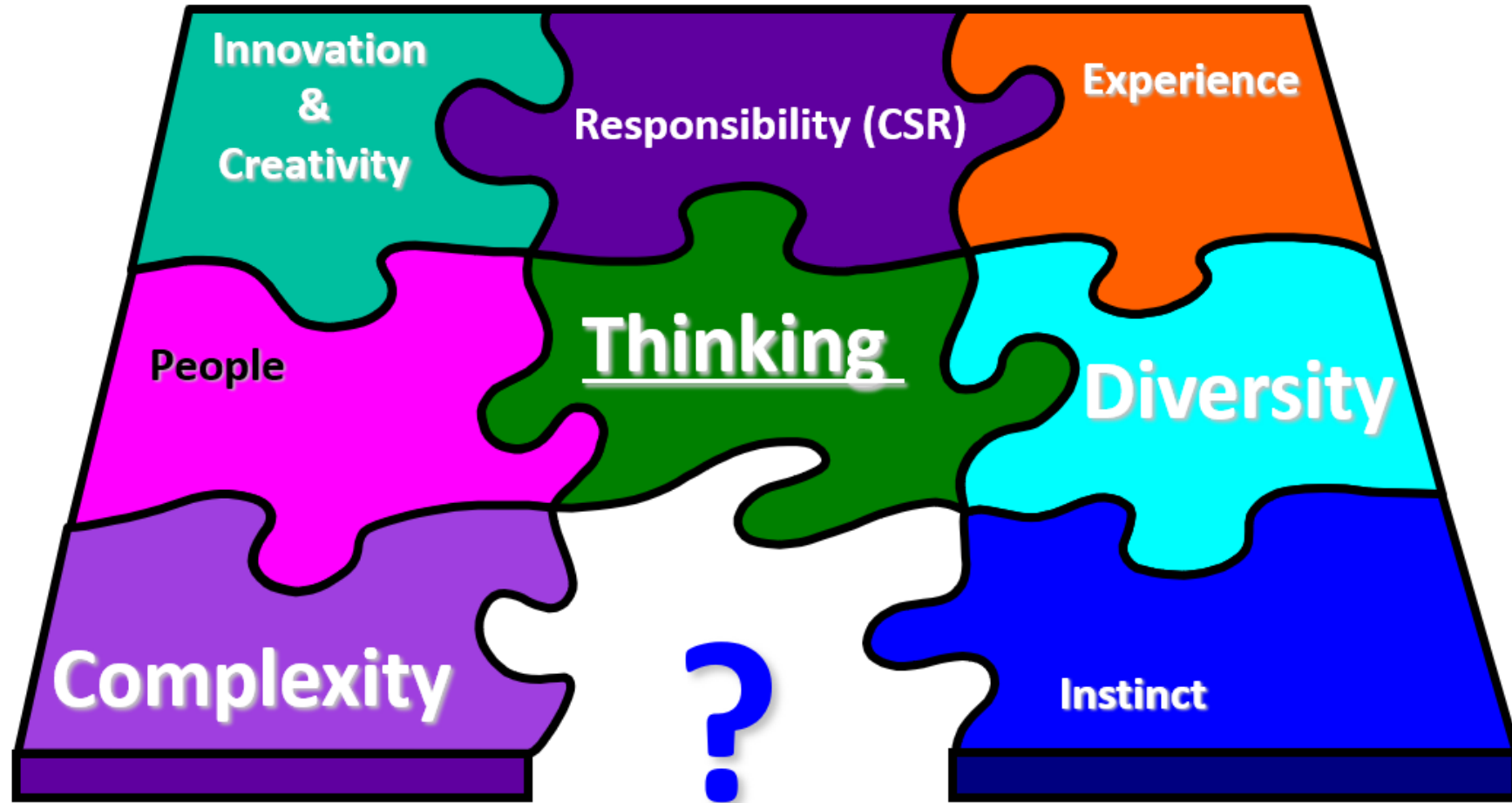
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Content

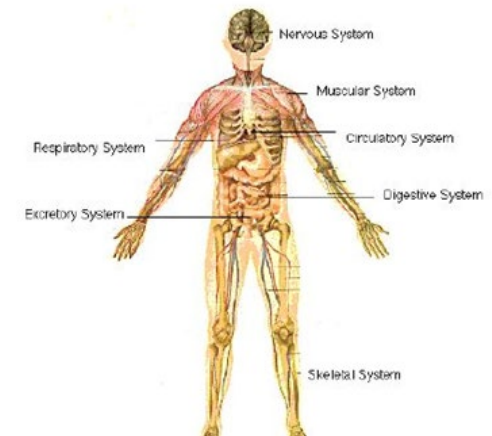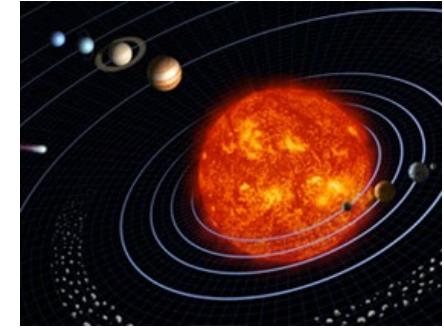- Introduction
- Core principles
- Approach
- SST in GIRT

What is a System?

A **system** is an entity which maintains its existence through the mutual interaction of its parts.

…von Bertalanffy, 1954

- Systems can be naturally occurring or man made.
- A system has a purpose that defines its actions.
- Things on their own have a limited use or value.

What is Thinking?

- The process of considering or reasoning about something.

- Thinking about the world is through established views or paradigms (Khun, 1970).

- Paradigms are developed as we learn new things e.g. the earth was thought to be flat.
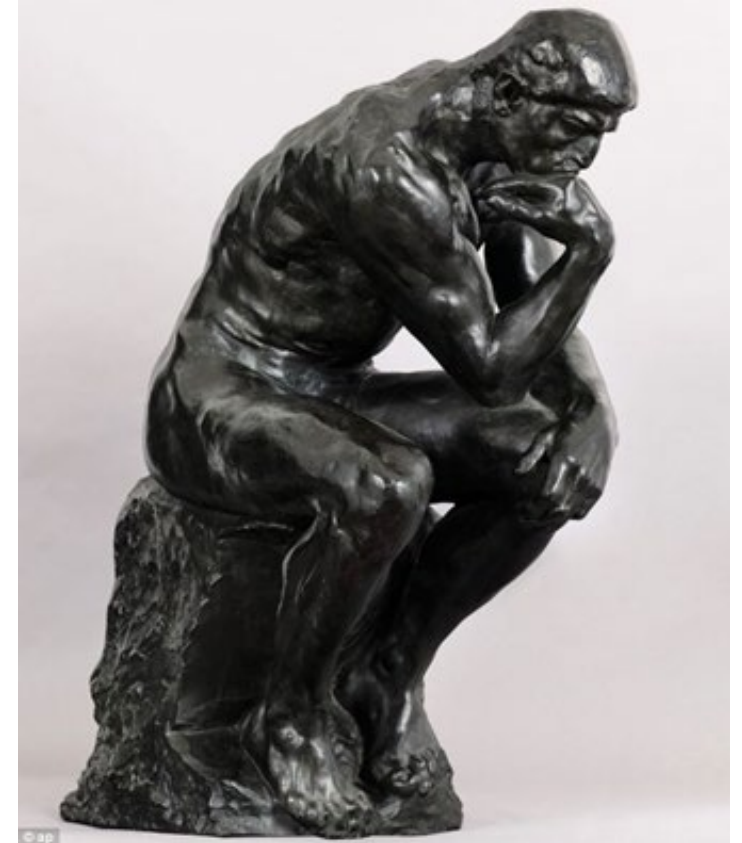
What is Systems Thinking?

- **Systems thinking** is a way of thinking about, and a language for describing and understanding, the **forces and interrelationships** that shape the behavior of systems. This discipline helps us to see how to change systems more effectively, and to act more in tune with the natural processes of the natural and economic world.

  - …Senge, 1993

- Systems Thinking has had a long association with research but it is only recently that the value in enabling Transdisciplinary research has been explicit.

- Systems Thinking is a broad topic that covers a range of specializations, such as: **Cybernetics, System Dynamics, Problem Structuring Methods, Critical Systems**.

- The underpinning fundamentals of systems thinking are:

- Viewing the situation **holistically**, as opposed to **reductionist**, as a set of diverse interacting elements within an environment.

- Recognizing that the **relationships or interactions** between elements are more **important** than the elements themselves in determining the behavior of a system.

- Recognizing a hierarchy of levels of systems and the consequent ideas of properties emerging at different levels, and mutual causality both within and between levels.

- ....Mingers & White, 2010

CORE PRINCIPLES

- **Accepting**, especially in social systems, that people will act in accordance with **differing purpose or rationalities.**

  - …. Mingers & White, 2010

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- Research as a **social activity** because **It is about people**.

- **Different perceptions** are interesting to think about.

- **Relationships** rather than individual functions.

- **Understanding** situations rather than simple answers to simple problems.

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APPROACH

- It is helpful to consider the **nature of a problem** and some of the terms that can be applied.

	Puzzles	Problems	Messes
Formulation	**Agreed**	**Agreed**	**Arguable**
Solution	Agreed	Arguable	Arguable

…Pidd, 2009

- In a mess, there are many issues to be faced, they are **interrelated and the interrelationships** are often as important as the issues themselves. A mess is a system of problems with multiple stakeholders who may hold quite different views of what is feasible and desirable.

  - …. Pidd, 2009

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- To be able to fully understand 'messes' it is important to be able to see the links as well as the particular issues.

- There is an old saying that a problem well put is half-solved. This much is obvious. What is not so obvious is how to put a problem well.

  - …Churchman, Ackoff & Arnoff, 1957

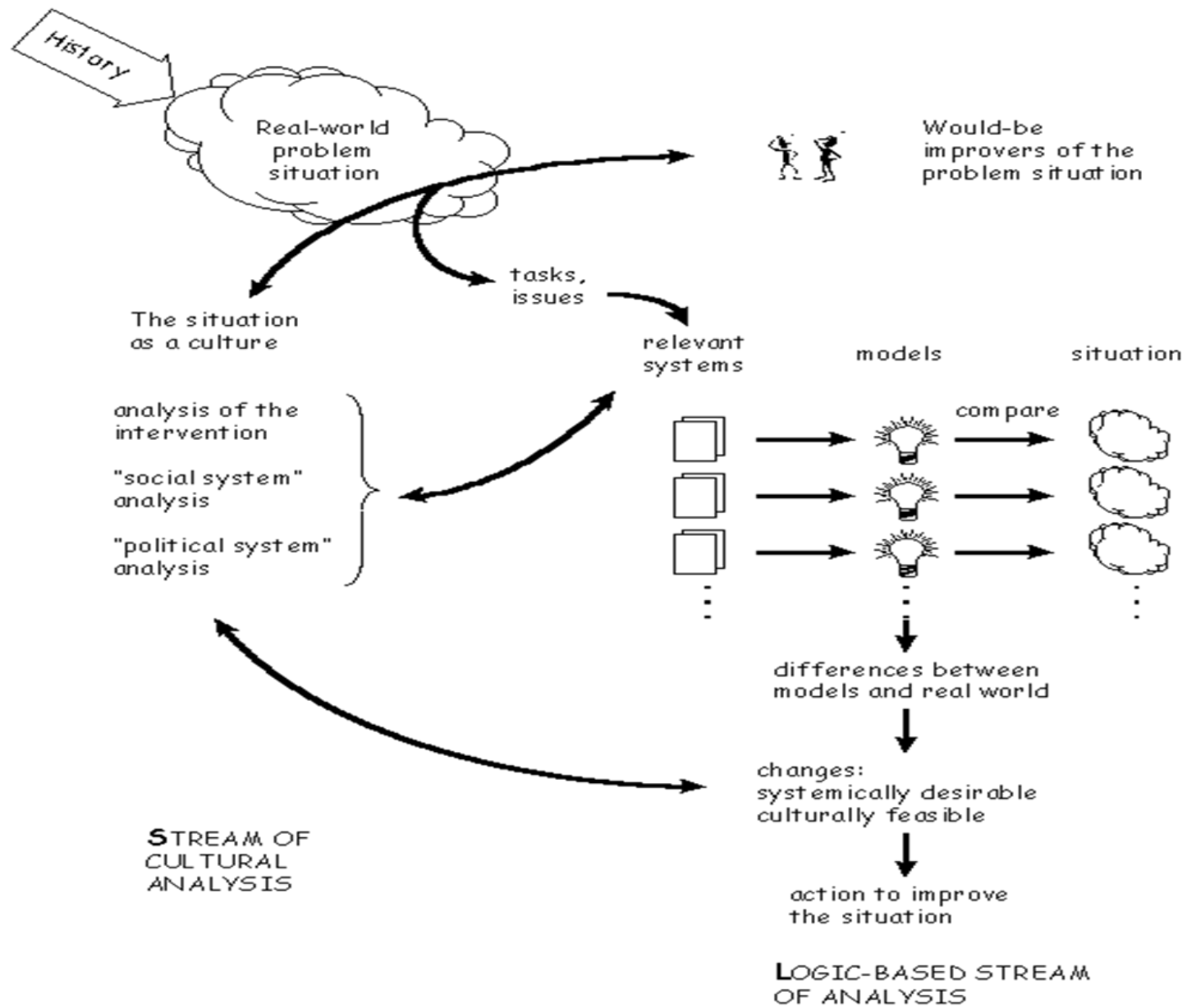- ---

- It is helpful to have methods that can aid in structuring the issues that exist within the problem being considered.

- For 'Soft' problems the challenge is how to represent complexity in a way that will not alienate a wide range of participants.

- A danger exists of using too mathematical a method that is difficult for non-experts to understand.

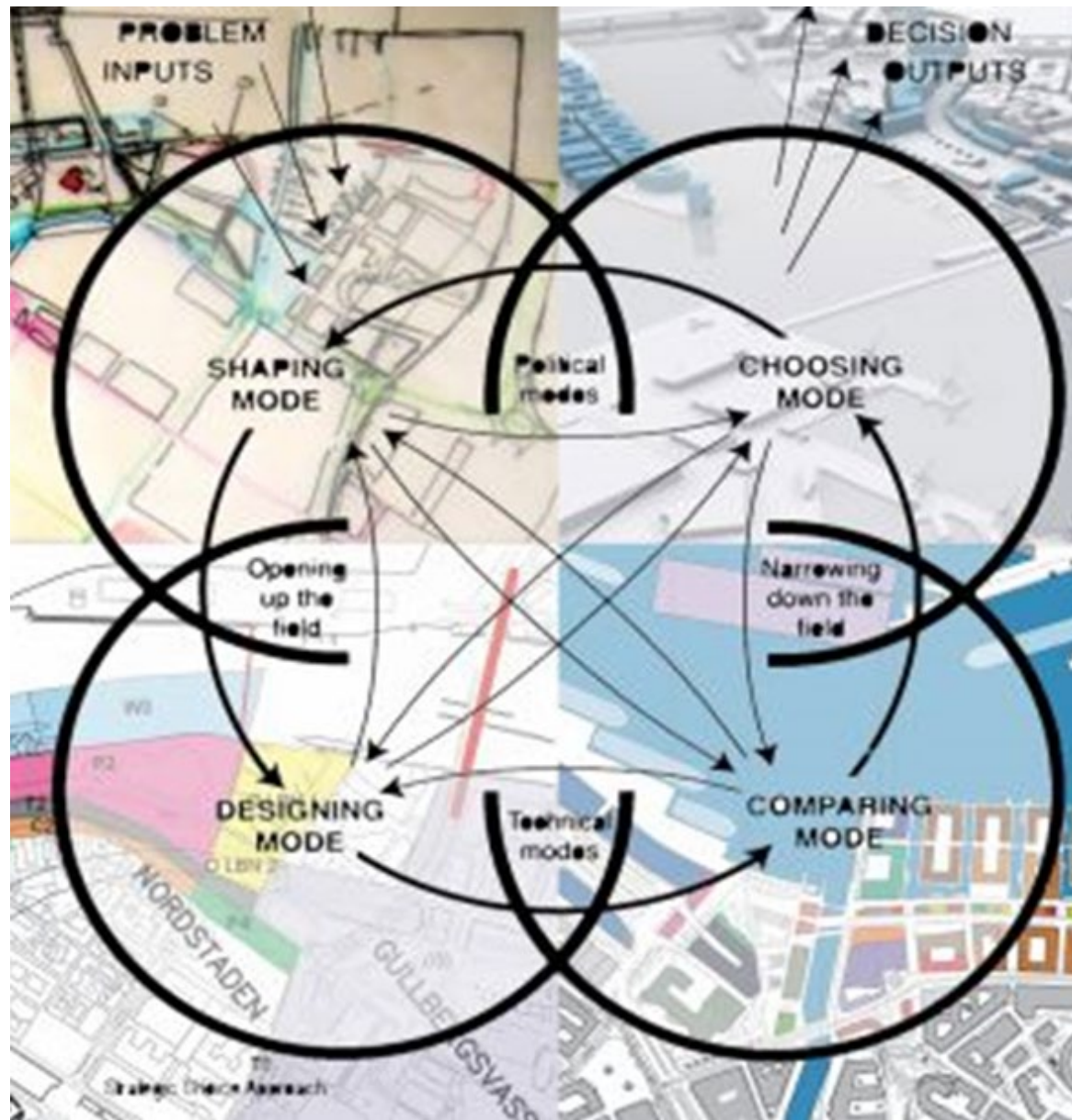- This is why graphical methods have become an important part of Soft methodologies.

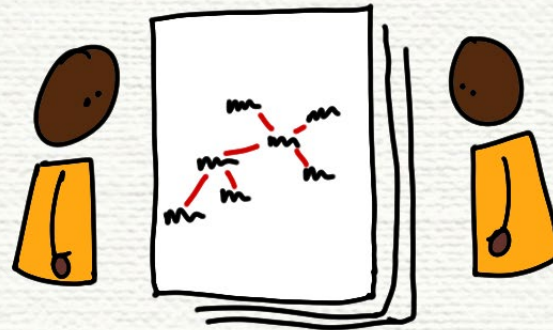|	**Soft Systems**	**Hard Systems**
Problem Definition	Not straightforward; it is itself problematic	A need has been established and defined
Nature of Question	What to do?	How to do it?
Nature of Organizational Life	Do not take it for granted	'Human machines' with people assigned according to function
Use of Models	Developed to allow people to think through positions and engage in debate	Are representations of part of the real world
Outcome	Importance of individual and organizational learning	A clear solution that can implemented

(Pidd, 2009) & (Checkland, 2001)

SST Address the Following Questions:

- What is the real problem?
- What goals or objectives are to be achieved given the conflicting perceptions about the problem situation?
- What are the constraints?
- Who are the players, the stakeholders?
- Who are the beneficiaries?
- Who are the regulators?
- What part of the world is involved? or What is the system?
- How does this system perform its functions?
- What are the system's subsystems?
- What are or what should be the criteria for evaluating system performance?
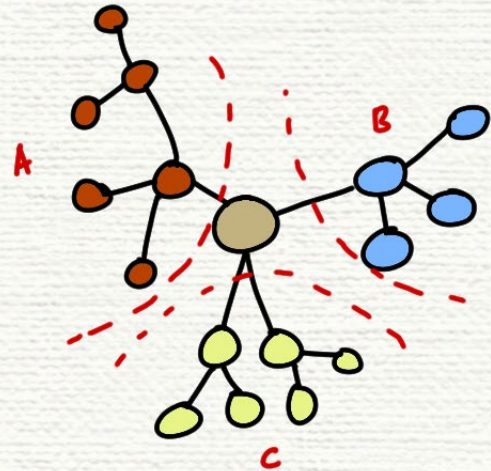 - *...Reisman & Oral, 2005*

- A number of approaches have evolved over the last few decades to develop a method to structure the Soft Systems philosophy.

- **Soft Systems Methodology (SSM)**
- **The Strategic Choice Approach (SCA)**
- **Strategic Options Development & Analysis (SODA)**

- It is important to consider their main elements and the tools that can be used to develop the thinking and learning about the problem being faced.
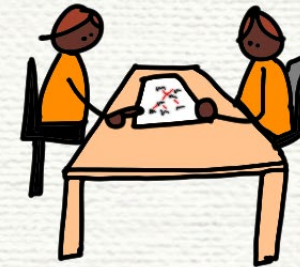
SSM by Checkland & Scholes, 1999

SCA by Friend, 2001

SODA by Handcrafted Insight, 2020

SST IN GiRT

- The way that Soft Systems can be applied in TD research is through a range of tools. These enable the critical thinking and learning that is at the heart of the varied approaches. Essentially, there are 3 stages to the use of the tools:

- **Surfacing the Issues involved**
- **Evaluating the gap to what could be achieved**
- **Overcoming the gap**

- A key aspect of these tools is that they are 'socially' driven, i.e. They require people to communicate with each other.
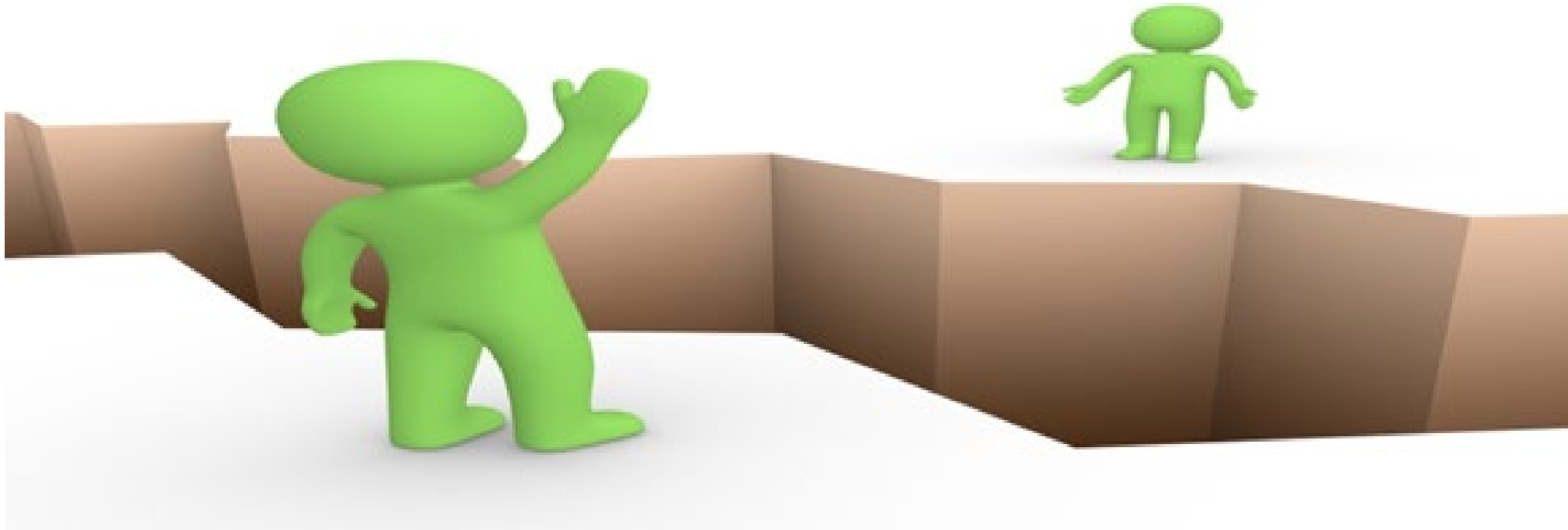
Surfacing the issues involved

Mind mapping
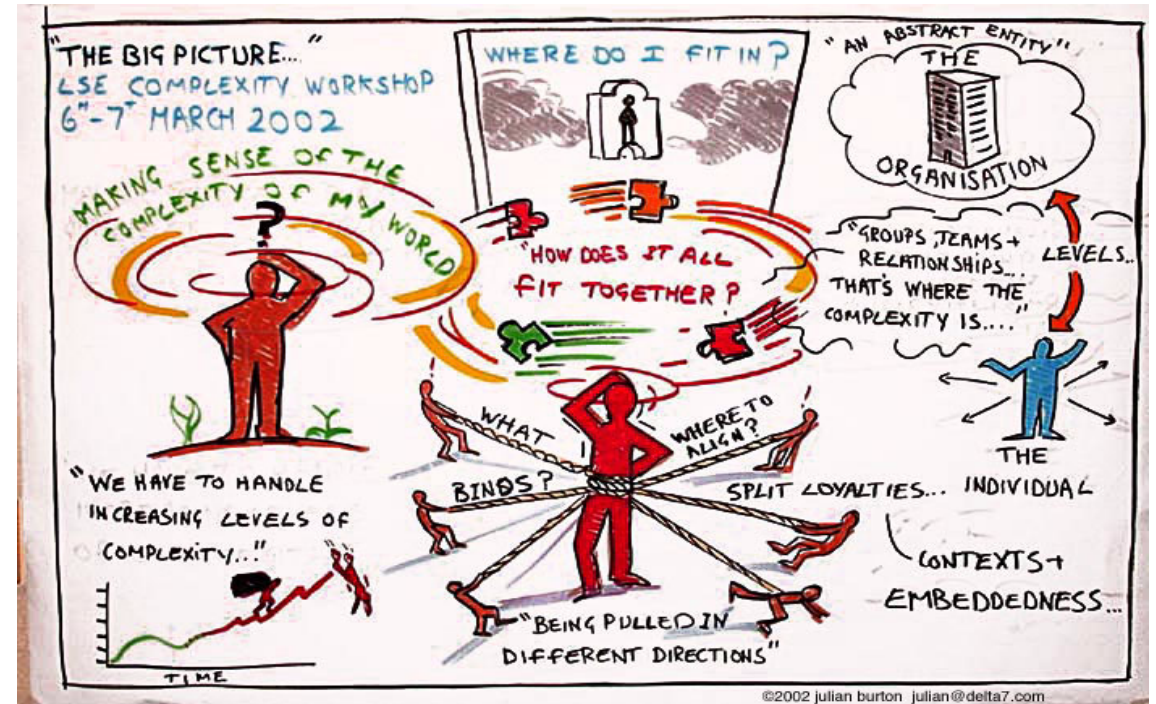
Rich Picture

Evaluating the gap

Identifying options and compatibility Exploring the purpose of the system

Overcoming the gap

Multiple Perception System [Input-Transformation -Output]
Conceptual Models of the results

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