SOFT SYSTEM METHODOLOGY

SOFT SYSTEM METHODOLOGY

- Methodology, NOT method
- Oriented to learning
- Assumes that the world is problematical but can be explored using systems models of concepts of purposeful activity to define "actions to improve"
- Assumes systems models are intellectual devices to help debate (epistemologies)

SOFT SYSTEM METHODOLOGY

- Talks the language of "issues" and "accommodations"
- Dialogue, NOT dialectics
- Systemicity lies in the process of inquiy into the world
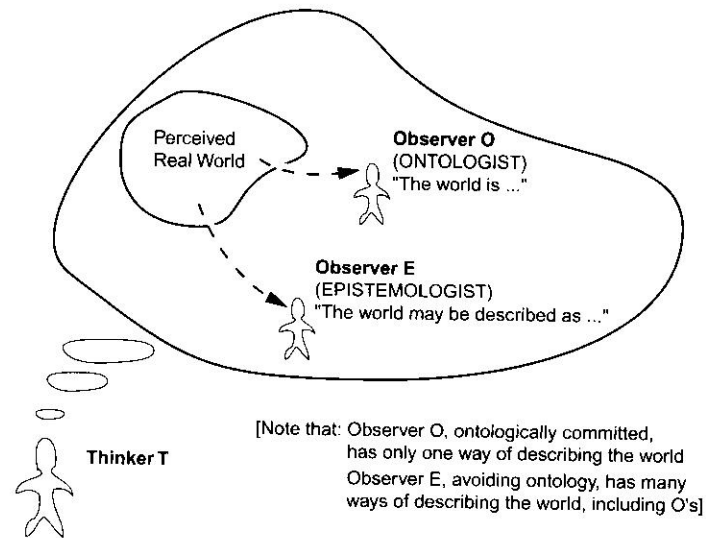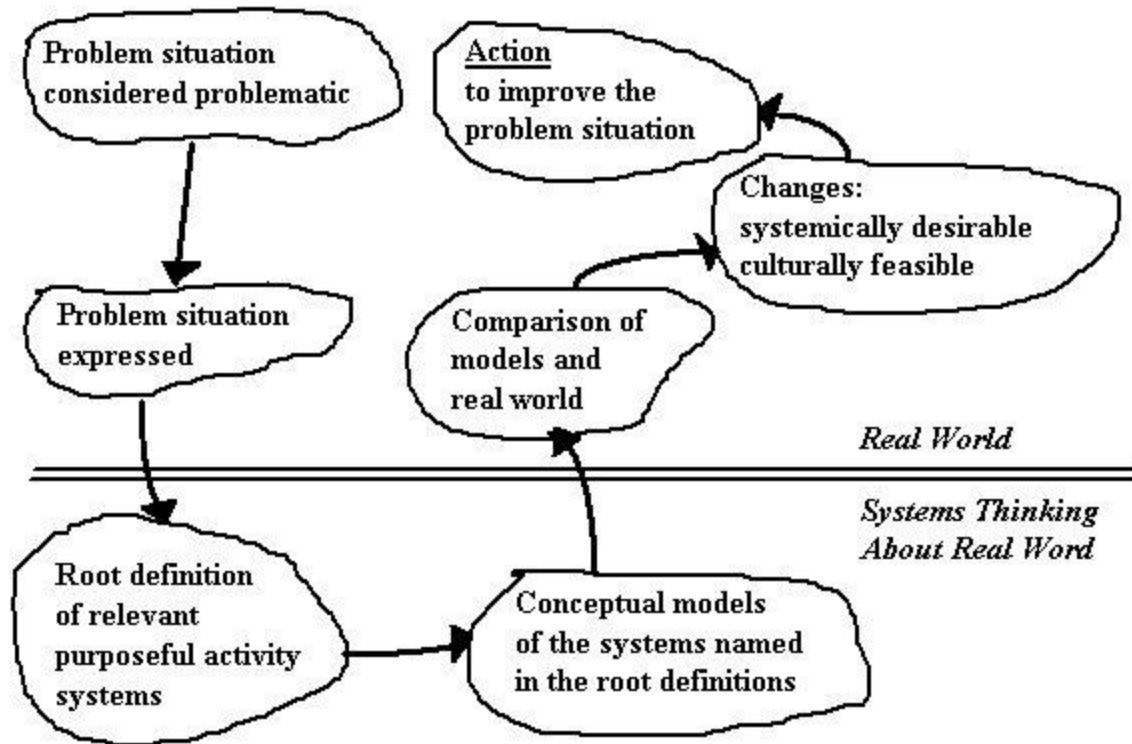- Interpretivism
- Phenomenology

SOFT SYSTEM METHODOLOGY

Figure 3.2—The thinker and the two observers.

SOFT SYSTEM METHODOLOGY
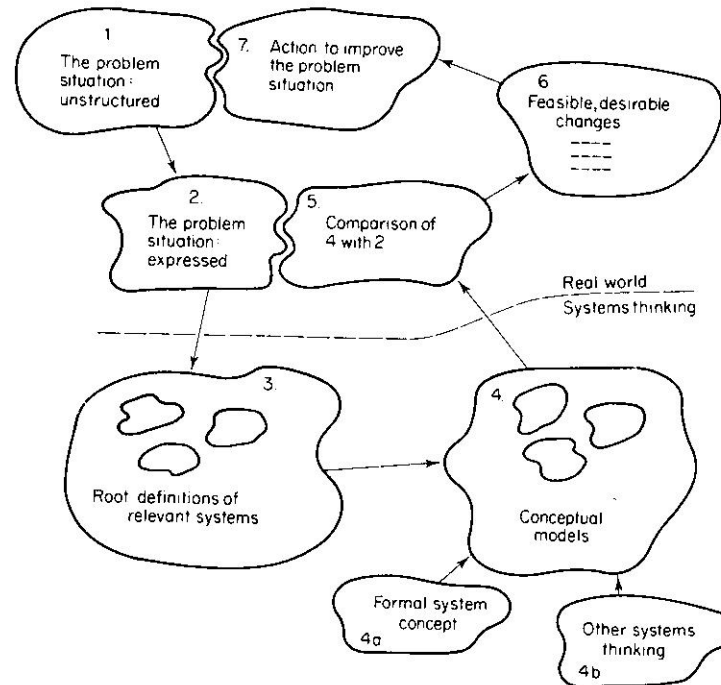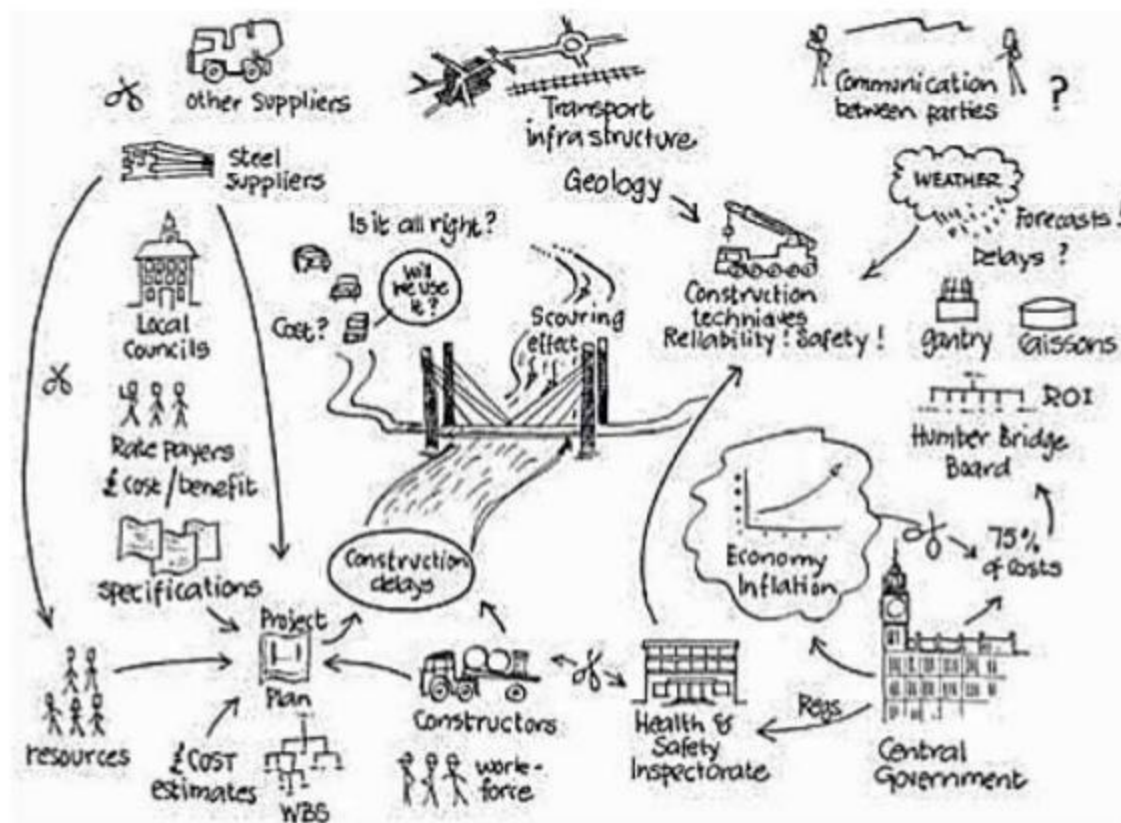
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Figure 6. The methodology in summary (after Checkland, 1975).

Stage 1: Finding out

- Search electronic and printed documentation
- Interviews
- Document consultation
- Films, audio …

Stage 2: Expressing The Problem Situation (rich pictures)

Rich picture of the construction of the Humber Bridge (adapted from Stewart and Fortune, 1994)

# Stage 2: Expressing The Problem Situation (rich pictures)

Peter Checkland suggests that you draw three different pictures, showing different aspects of the situation:

- The *intervention* (analysis process) and your role in it: why are you performing the analysis? for whom? with whom? what does your client want to achieve from the analysis (this is *very* important: what are the goals of your system?) - this information informs your decisions about what to leave in and what to exclude from your system
- The *social context*: who are the people involved in the situation being analyzed and how do they relate to each other?
- The *political context*: who holds power? over whom? how is power exerted? how is it resisted? is the person "in charge" the person who makes things happen?

Stage 3: Deriving Root Definitions Of Relevant Systems

- A Root Definition is a definition of the purpose of the system of human-activity.

- Any definition of *purpose* embodies some complex concepts, that are stimulated by use of the **CATWOE framework**.

The CATWOE framework
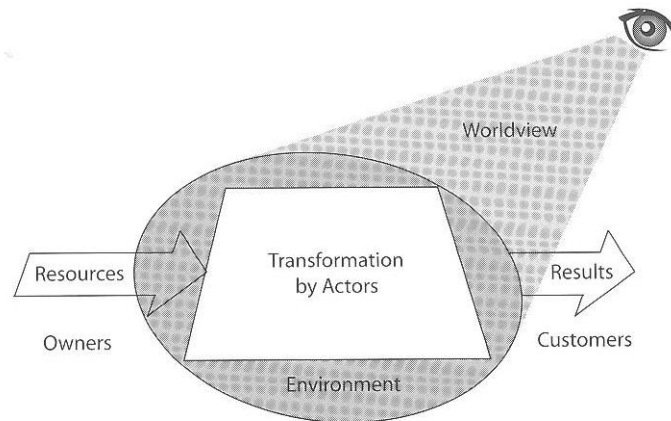
CATWOE

- **Customer:**
  - Who is the system operated for?
    Who is the victim or beneficiary of this transformation-system?

- **Actor(s):**
  - Who will perform the activities involved in the transformation process?
    - *It is important to define a single set of people who are acting in concert here. If you have multiple sets of people, this normally indicates that you are confusing two or more transformations.*

- **Transformation:**
  - What *single* process will convert the input into the output?
    - *It is important to define a single (not complex) transformation. If you have multiple verbs, this normally indicates that you are confusing two or more transformations.*

CATWOE

- **Weltanschhaung *aka* Worldview:**
  - What is the view which makes the transformation worthwhile?
  - ***THIS IS THE MOST IMPORTANT PART OF THE CATWOE!!!***
  - *Understanding this element communicates the real purpose of the system from this perspective, so you should work hard at this part.*
- **Owner:**
  - Who has the power to say whether the system will be implemented or not? (Who has the authority to make changes happen?)
- **Environment:**
  - What are the constraints (restrictions) which may prevent the system from operating? What needs to be known about the conditions that the system operates under?
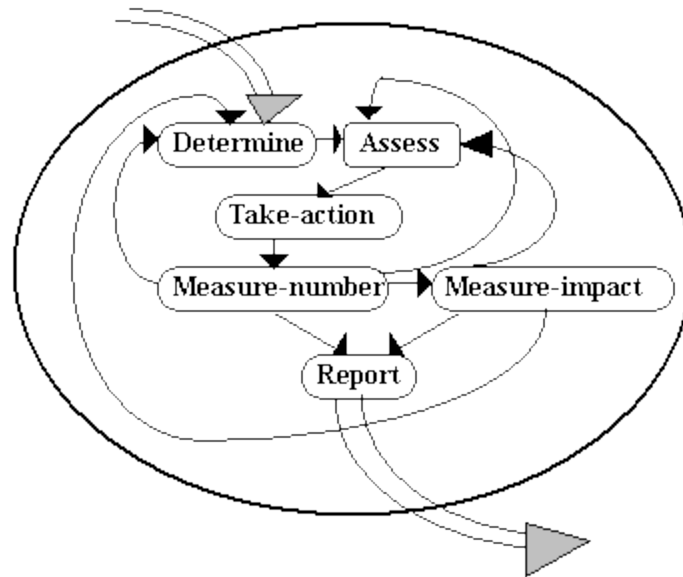
Stage 4: Deriving Conceptual Models

- Deriving a conceptual model is a method of analyzing the activities which need to take place in order to clearly define what the actors need to do in order to achieve the transformation.
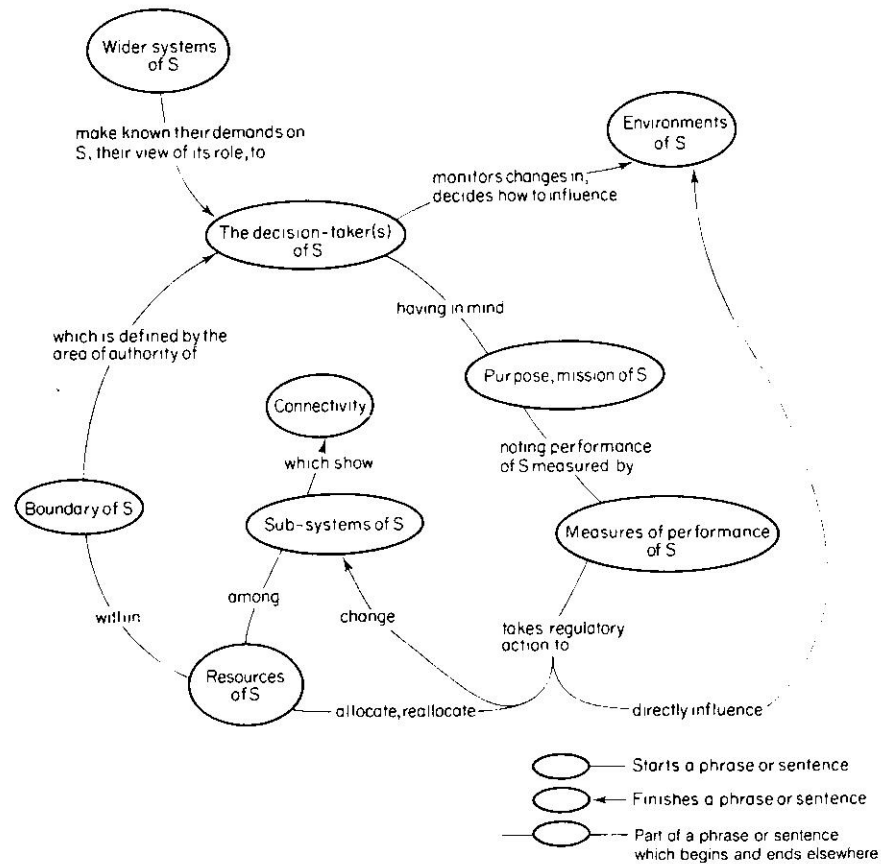
Conceptual model example

- *A system owned by Local Government Administration, where Local Government Officials make driving less attractive than public transport on behalf of Environmental Lobbyists among the public because the number of cars on the road is directly related to environmental degradation and public health problems, but limited by the need to find alternatives to financial incentives alone and the power of drivers' lobby groups.*

- List of activities for this transformation are:

  1. Determine what factors make driving more attractive than public transport

  2. Assess what action can be taken to affect those factors by Local Government Officials

  3. Take those actions

  4. Measure the number of people who transfer from cars to public transport

  5. Measure the impact upon the environment of that transfer

  6. Report to the public on the results.

Conceptual model example

Formal models

Stage 5: Comparing Conceptual Models With The Real World

- What do the models represent?
  - Problematic situation?
  - "Solution" ?

- Validate conceptual models by presenting them to stakeholders and asking for feedback.
- *Once you are happy with them …*
- … The purpose of all this activity is not to just draw pretty pictures, but to provide a solid set of prioritized recommendations for what changes need to be made to existing activity.

Stage 6: Analyzing Feasible And Desirable Change

- *There are three elements that need to be considered:*
  - *Feasibility*
  - *Priorities*
  - *Risk*

Stage 6: Analyzing Feasible And Desirable Change

- **Cultural feasibility:** what is acceptable to the people working in this part of the organization (from their perspectives).

- **Technical feasibility:** what it is appropriate to support with computer technology and what should be left as a manual process - as well as what it is possible to computerize. Dependencies between work-systems and between technical systems.

- **Win-win:** does the change make life easier for people. If you are recommending that people perform six steps instead of three, to accomplish a task, perhaps you should reconsider? If people's lives are made more difficult, they will resist change and probably find ways to sabotage it. It makes sense to define changes that the people involved in the activity system will accept. Perhaps you need to find ways of compromising, so that everyone wins by the changes that you propose.

Stage 6: Analyzing Feasible And Desirable Change

- Priorities

	Goal 1	Goal 2	...	Goal n	Problem 1	Problem 2	...	Problem n	Totals
Change 1	5	3		7	2	8		3	28
Change 2	3	2		1	7	4		2	19
...	...	...	...	...	...	...	...	...	...
Change N	7	4		5	5	3		3	27

Stage 6: Analyzing Feasible And Desirable Change

- Risk analysis

Risk or Benefit	Likelihood that it will happen	Importance to company	Risk/benefit score**	Cause or way in which it could happen	Risk/benefit management strategy
Increase sales by 20%	High, *score (out of 10)* = 8	10	80	System makes ordering easier $\Rightarrow$ higher customer satisfaction	Ensure ease of ordering is #1 system requirement & *evaluate** before delivery.
Reduce delivery times from 3 days to 1 day	High, *score (out of 10)* = 8	10	80	System reduces number of process-steps required to place order & centralizes order data (easy to coordinate)	Ensure that system designers understand critical nature of this requirement & *evaluate** before delivery.
20-30% system development time overruns	Low *score (out of 10)* = 3	10	30	Lack of coordination between different system development groups	Appoint system development coordination manager
Users do not use system as planned	Medium 6	8	48	System causes more work for users or does not support sensible tasks.	Plan at least 2 system evolutions*, to permit developers to learn from how system is used operationally.
System development overruns by 20-30%	High 9	8	72	Unexpected problems in design or unrealized technical dependencies.	Have a knowledgeable domain expert supervise all design walkthroughs
Users do not use system as planned	High 8	8	64	Lack of evaluation testing because of tight delivery timescales	Plan for additional evaluation testing and enhancement in phase 2.

Stage 7: Taking Action