

Soft systems methodology

A systems thinking based tool for creating shared understandings of a problem situation, working out possible improvements and deciding on the one(s) to implement.

What is soft systems methodology?	Soft systems methodology is a methodology to structure complex real world problems and to develop and identify desirable and feasible changes in a heterogeneous group of actors. It particularly supports dealing with different thought styles ("Worldviews" or "Weltanschauung" in Checkland's terminology).
Why should it be applied?	Soft system methodology is one of few methods explicitly designed to lead a heterogeneous group through a process from structuring a complex problem and developing possible changes to selecting the most desirable and feasible change(s) to implement.
When should it be applied?	Soft System Methodology can be applied during the whole process of co-producing knowledge, from problem analysis to bringing results to fruition.
How does it work?	<p>Soft System Methodology includes the following basic steps, which are run through iteratively:</p> <ol style="list-style-type: none"> 1) Expression of a problem situation: Collectively, group members create a comprehensive picture of the problem situation by drawing a rich picture. Individual pictures can be combined to one overall rich picture. 2) Root definition: Starting from the overall rich picture, possible improvements of the problem situation are brainstormed. The improvements are formulated as root definitions, purposeful systems conceived as relevant to exploring the problem situation. A root definition starts with "A system of activities that ... ", followed by the idea, formulated as an input-output purposeful transformation of the problem situation. The root definition specifies what is transformed by whom and for what purpose. It should answer the questions abbreviated by the mnemonic CATWOE: <ul style="list-style-type: none"> • C ('customers'): Who would be victims or beneficiaries of this system were it to exist? • A ('actors'): Who would carry out the activities of this system? • T ('transformation process'): What input is transformed into what output by this system? • W ('Weltanschauung'): What image of the world makes this system meaningful? • O ('owners'): Who could abolish this system? • E ('environmental constraints'): What external constraints does this system take as given" (Checkland 1985, pp 763) 3) Making and testing conceptual models: Group members now debate and organise the concrete activities required to improve the problem situation described in the root definition: Group members <ul style="list-style-type: none"> • brainstorm 7±2 concrete activities required to carry out the improvement (using verbs in the imperative) • put each activity in a box and draw arrows between the activities showing how they depend on each other • add the activities 'monitoring' and 'control' to the system.

- 4) Comparing conceptual models to reality: Whereas steps 1-3 take place in the realm of concept and ideas, step 4 relates the conceptual model back to reality, for instance by discussing how both differ. The main aim is to identify what Checkland calls "feasible and desirable" changes that provide "accommodation among conflicting interests".
- 5) Implementing "feasible and desirable" changes.

How are thought styles bridged?	Thought styles are bridged through learning about each group member's perception of the problem and through keeping worldviews that underlie the conceptions of problems and possible solutions explicit throughout the whole process.
What's the output/outcome?	Soft systems methodology results in feasible, realistic, well-reflected and desirable systems of activities that indicate how to change a problem situation.
Who participates in what role?	A facilitator who is familiar with soft systems methodology should lead the process, while reinforcing that the process is owned by all participants. Soft System Methodology is intended for co-producing knowledge with diverse stakeholders.
What do I need to prepare?	As a facilitator you need usual workshop equipment, such as flipcharts and markers. Furthermore, it is advisable to make a plan for how to record and integrate oral contributions. Going through the four steps might take some days of (intensive) workshop. Coming from systems thinking, Checkland uses expressions (customer, root definition, system of activities) that might not be easy to understand. Therefore, facilitators are encouraged to do some background reading of soft systems methodology. Time also has to be reserved to plan how to practically carry out each step and how to handle and integrate the group members' contributions.
When not to use the method?	If a problem is well defined and can be engineered (i.e. the goal is clear and the challenge is optimization).
Where can I learn more?	Selected references: <ul style="list-style-type: none"> • Checkland P 1985. From Optimizing to Learning: A Development of Systems Thinking for the 1990s. Journal of the Operational Research Society, V36, pp 757-767. • Checkland P 1994. Systems Thinking, Systems Practice. Chichester: Wiley. • Checkland P 2000. Soft systems methodology: a thirty year retrospective. Systems Research and Behavioral Science, V17, Supplement 1, pp S11-S58. <p>Check the online profile on www.transdisciplinarity.ch/toolbox for updated resources (e.g. most recent publications, experience reports, videos, links).</p>

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SDGs: The International Sustainable Development Goals of the UN

In this publication, the Swiss Academies of Arts and Sciences make most notably a contribution to SDGs 4, 16, 17:

> sustainabledevelopment.un.org

> eda.admin.ch/agenda2030/en/home/agenda-2030/die-17-ziele-fuer-eine-nachhaltige-entwicklung.html



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