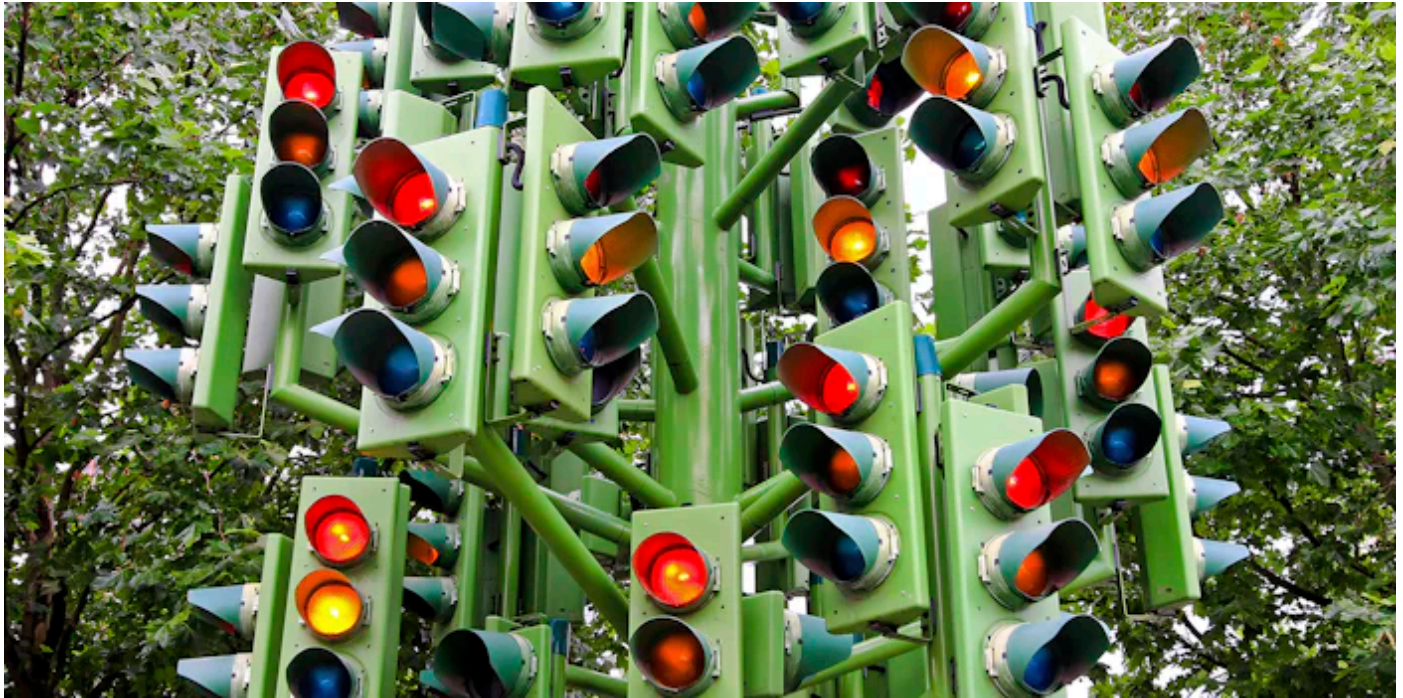


Soft Systems Methodology (SSM)

Understanding Very Complex Issues

Understanding Very Complex Issues



Use Soft Systems Methodology to clarify complex situations.

Baloncici / © iStockphoto

Some problem solving tools can oversimplify the world when, in reality, it can be complex and messy.

In cases where many different factors contribute to an issue, and there are lots of different perspectives to consider, it can be difficult to tell where the root of the problem really lies. All this confusion can make finding a solution seem impossible. What you need is a problem solving approach that gives you a clear view of what's involved, so that you can focus on what you can do to improve the situation. In situations like this, Soft Systems Methodology (SSM) might be just what you need.

How SSM Was Developed

Soft Systems Methodology grew out of general systems theory, which views everything in the world as part of an open, dynamic, and interconnected system. The various parts of this system interact with one another, often in a nonlinear way, to produce a result.

According to general systems theory, organizations consist of complex, dynamic, goal-oriented processes – and all of these work together, in a coordinated way, to produce a particular result. For example, if a company's strategy is to maximize profits by bringing new products to market quickly, then the systems within the company must all work together to achieve this goal.

When something goes wrong within the system, or any of its subsystems, you must analyze the individual parts to discover a solution. In hard sciences, you can do this in a very controlled, analytical way. However, when you add human or "soft" elements – like social interaction, corporate politics, and individual perspectives – it's a much more difficult process.

That's why Peter Checkland, a management scientist and systems professor, applied the science of systems to the process of solving messy and confusing management problems. The result was Soft Systems Methodology – a way to explore complex situations with different stakeholders; numerous goals; different viewpoints and assumptions; and complicated interactions and relationships.

SSM helps you compare the "real world" with a model of how the world could be. Through this modeling process, you can go beyond the individual perspectives that might limit your thinking – and you can recognize what's causing the problems within the system.

Using SSM

Because SSM deals with real-world situations, it needs to reflect real-world problems, which often have nonlinear relationships that are not well defined. As a result, SSM activities are also nonlinear and not perfectly defined. Many other problem-solving tools can be shown as flow charts with a series of clearly defined steps. But diagrams used in SSM are more like mind maps – they show relationships between activities, but they don't show a linear route through them.

Checkland warns against thinking of SSM as a step-by-step process. However, if SSM is to be useful, you need to know where to begin. In this article, therefore, we'll give you a series of steps to help you get started (you can abandon this stepwise approach when you're more familiar with the methodology). To learn more about using the SSM approach, read "[Learning for Action](#)," by Peter Checkland and John Poulter.

"Learning for Action" by Peter Checkland and John Poulter, © John Wiley & Sons, Inc. Terms reproduced with permission.

Note 1:

Although it's easy to think of Soft Systems Methodology as a "problem-solving approach," Checkland encourages SSM users to avoid thinking of a "problem" that can be "solved" by a "solution." These words imply that something is well defined and straightforward. Instead, he prefers the terms **problematical situation** and **improvements**.

Here's an example: "My car won't start" is a problem that might be solved by the solution "Charge the battery." However, consider "People don't enjoy driving this new model of car." This is a problematical situation for the manufacturer, which needs to look for actions that might improve the driving

experience for customers.

Step 1: Explore the Problematical Situation

Create what Checkland calls a "rich picture" of what's happening. This is, in effect, a [mind map](#). It shows the main individuals, groups, organizations, relationships, cultures, politics, and processes involved in the situation. Also, try to identify the different perspectives, or "worldviews," that different groups have of the situation.

Then, among these individuals or groups, identify the "client" who wants an improvement in the situation, the "practitioner" who is carrying out the SSM-based investigation, and the stakeholders who would be affected by an improvement in the situation.

Your goal, here, is to include as much relevant information as possible on a large sheet of paper.

Step 2: Create Purposeful Activity Models

Identify the "purposeful activities" being carried out by people involved in the situation. These are things that they're doing, as well as the actions they're taking to improve the problematical situation. Make note of which activities belong to which worldview.

Then, create a "root definition" of each activity. This is a more sophisticated description of the basic idea, and it contains enough detail to stimulate an in-depth discussion later on.

Checkland proposes two tools for developing the root definition. The first is called PQR:

- P stands for "What?"
- Q stands for "How?"
- R stands for "Why?"

If you answer the above questions, you can complete this formula: "Do P, by doing Q, to help achieve R."

The other tool is [CATWOE](#) . Use this to further improve the root definition by thinking about the following:

- Customers – Who receives the system's output?
- Actors – Who performs the work within, or implements changes to, the system?
- Transformation – What is affected by the system, and what does it do?
This is often considered the most important part of CATWOE.
- Worldview – What is the big picture?
- Owner – Who owns the process?
- Environment – What are the restrictions and limits on any solution?
What else is happening around it?

Finally, develop these into purposeful activity models. Ideally, you'll have 5–7 steps to cover all of these descriptions for each purposeful activity model, although you can break down individual steps into their own root definitions and activity models.

Checkland recommends reviewing these in the light of "three E's":

- **Efficacy** – Ways to monitor if the transformation is, in fact, creating the intended outcome.
- **Efficiency** – Ways to monitor if the benefits of the transformation are greater than the cost (in time, effort, and money) of creating them.
- **Effectiveness** – Ways to identify if the individual transformation also

contributes to higher-level or longer-term goals.

Step 3: Discuss the Problematic Situation

Discuss in detail each purposeful activity model. Your goal is to find ways to improve the problematic situation. Some of the following questions may help:

- Does each part of the model truly represent what happens in reality?
- Do the dependencies and relationships between activities in the model also exist in reality?
- Is each activity efficacious, efficient, and effective?
- Who performs each activity? Who else could do it?
- How is each activity done? How else could it be done?
- When and where is each activity done? When or where else could it be done?

Having created a list of possible improvements, you may want to create purposeful activity models for each one. Following the process for doing so helps ensure that you've considered all of the various worldviews involved, which is necessary for the improvement to have a realistic chance of being implemented.

Step 4: Define "Actions to Improve"

The group doing the SSM-based analysis of the problematical situation now has to agree on which actions it thinks will improve the situation, and the group must define those actions in enough detail to create an implementation plan.

Remember, because people have different worldviews, there won't necessarily be agreement on which actions to take to improve the situation.

However, everyone involved should reach what Checkland describes as an "accommodation" or compromise, so that they agree on practical options that meet the three E's – efficacy, efficiency, and effectiveness.

Note 2:

Change generally involves **people**, **processes**, and **things**. New "things" are usually the easiest to change: you can simply buy new equipment or systems. New processes need a lot of definition, but they can also be reasonably clear and straightforward to implement. Changes to people – involving culture or attitudes – are typically much more difficult. For more on this, see our article on [Change Management](#) .

Note 3:

We've presented Soft Systems Methodology here as a set of steps, but experienced SSM practitioners usually perform its activities in a repeated and ongoing manner – and they're flexible with SSM ideas, rather than following a strict process.

Checkland, P. and Poulter, J. (2007). ['Learning for Action: A Short Definitive Account of Soft Systems Methodology, and Its Use for Practitioners, Teachers and Students,'](#) Hoboken: Wiley.