

# **T306\_4 Systems practice: managing sustainability**

Soft Systems Methodology: modes of practice



**The Open  
University**

# Appendix B

## Soft Systems Methodology: Modes of Practice

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### Introduction

Systems thinking, in the form of a general theory, emerged during the 1950's and gave birth to what is now known as the 'systems movement'. Within the systems movement a number of different approaches to 'doing' systems thinking appeared. One of these, concerned with the management of human affairs, and which evolved over a period of intellectual deliberation and organized experiential learning is Soft Systems Methodology (SSM). The early version of SSM was described in terms of a conventional seven-stage model; this has now matured into a more sophisticated form of structured inquiry involving interacting streams of logic-based and cultural analysis (Checkland and Scholes, 1990). SSM is well known but is still perceived by many to be the preserve of academia rather than a useful tool that can be used to deal routinely with the complex human and information management issues that confront every manager.

The feature that distinguishes SSM from other systems approaches is that SSM is itself a learning system – in other words an organized process of inquiry, the form of which is based on systems ideas. Systemicity is focused on the process of inquiry rather than on the world (Checkland and Haynes, 1994).

This article will set out to reflect on the practical experience of 'doing' systems thinking in the context of an organized process of inquiry, based on SSM, and employed by the author in numerous consulting situations over a six-year-period. These consulting experiences range from public to private uses of the methodology to deal with a variety of problem situations, and also those where clients expect to acquire SSM skills in compressed time-frames in order to subsequently do their own problem solving. It will describe briefly ways in which those in a problem situation and who are methodologically naïve can become involved in participative problem solving where they use the ideas directly themselves. It will finally draw together the lessons that emerge from this practice and hopefully make a small contribution to the further development of a well established methodology.

### The forms and modes of SSM

The 'popular' version of SSM is that of the conventional seven stages as shown in Figure 21 (p. 96) in the main text. Although the developers of SSM now regard this as being 'rather bald' (Checkland and Scholes, 1990), first-time users find it easy to assimilate, its 'rule-based' appearance is attractive to many, and it offers a coherent problem-solving process.

Two main weaknesses of this early version can be identified. Firstly, would-be problem solvers tend to slavishly follow through the prescribed seven-stage process, lacking the confidence to adapt it to suit a particular

problem situation; as a result problem solving tends to be driven by the needs of the problem solving process rather than the problem situation itself. The second problem is that cultural aspects tend to be overlooked – organized purposeful human activity usually being burdened with hidden agendas, vested interest, power and all the other ingredients that combine to form the rich background tapestry of organizational life. These weaknesses have led to some shallow uses of SSM which sometimes fail to get to the root of a problem and occasionally lead to disillusionment with the methodology.

The learning derived from early experiences led to a developed form, the main elements of which are illustrated in Figure 21 (p. 87 in the main text). This is a significant step-change in sophistication for the naïve user, requiring a higher level of abstract and conceptual thought. A non-academic user seeking a ready-made process for dealing with messy problem situation is asked to deal with ‘two interacting streams’ (Checkland and Scholes, 1990) of analysis, one of which, the cultural element, is offered with few ‘rules’ apart from some general guidance. Primary task and issue-based choices of relevant systems become an explicit requirement – many first-time users find the distinction between the two difficult to understand.

The above paragraphs describe very briefly the development of the SSM process from an algorithmic style seven-stage model to a mature form that expects more of the user. In parallel with this the developers have recognised two ways or ‘modes’ of use. Mode 1 is described as the ‘formal stage-by-stage application of the methodology in order to intervene and conduct an inquiry into a problem situation. Mode 2 use involves the internal mental use of the methodology as a thinking mode to guide interaction with ‘the flux of events and ideas’ that characterise a particular problem situation and so enable learning towards improvement’ (Checkland and Scholes, 1990, pp. 281–283). For those who are not natural conceptual thinkers Mode 2 is possibly beyond reach in a normal consulting situation.

### **Managerial consulting with SSM – the dilemma**

The consultant employing SSM to guide his or her practice is faced with a dilemma. SSM is well known having achieved considerable penetration into the public domain. Prospective users generally understand that it can be applied usefully to complex, messy problem situations that are essentially human in nature. The seven-stage model described above is clear, easily understood and can be assimilated by most in the limited consulting time usually available. It is the best thing about SSM for the first-time user whose orientation is one of problem solving, rather than methodological appreciation. The main difficulties in application are:

- 1 persuading people that developing some form of a picture capturing the main elements of the problem situation is a useful thing to do and that considerable artistic talent is not a prerequisite; and
- 2 ensuring that purposeful activity models constructed are not models of the real world.

The dilemma is that whilst on the one hand, the seven-stage model offers a practical route to realizing the participative philosophy of SSM: ‘Given its nature as a system of inquiry, the use of SSM has to be participative. The role of the ‘expert’ in SSM is best thought of as helping the people in the

situation carry out their own study' (Checkland, 1988), its shortcomings lie in the lack of an explicit requirement to examine the cultural situation. Thus the analysis can become mechanistic and lack richness with the result that learning is inadequate and a desirable level of accommodation between different interest groups is not reached. On the other hand, the alternative is to employ the developed form of SSM from the outset but this involves a greater investment in time. In the commercial world it is unusual to find clients willing to give more than a couple of hours to learning and thinking about a methodology – most wish to press on with the task at hand.

### **Organizing the process of SSM – the building blocks**

The consultant employing SSM as an approach has at his or her disposal a framework containing a number of ideas. At a meta-level these include the basic building blocks of systems thinking of emergence, hierarchy, communication and control. At a methodological level these include the ideas that

- ◆ problem situations that are human in nature can be explored usefully in terms of purposeful activity;
- ◆ purposeful activity is linked to a particular worldview and that each situation can contain many worldviews (all equally valid);
- ◆ 'ideal type' models of human activity systems can be constructed and used as devices to learn, to enable accommodations to be reached and improvements made.

Finally, the methodology is supported by techniques and rules such as rich pictures, CATWOE, rules for model building (language, dependency, formula, etc.) and comparison tables.

### **Organizing the process of SSM – reflections on practice**

An important consulting objective is to adopt from the beginning of each assignment, a problem rather than a methodological, orientation answering the question 'how best can these ideas (wider systems concepts and SSM) be organized to help in this particular situation?' In other words *giving specific attention to organizing the process of inquiry in order for useful learning, for the client, to occur.*

There is considerable variation between problem situations encountered and the way clients wish to proceed as shown by the following examples:

- 1 At one end of the spectrum some wish to assimilate (usually in the space of a couple of hours) and then use the methodology themselves with brief subsequent help from the consultant.
- 2 In the middle there are those who expect a transparent use where they are exposed to the methodology but do not actually become involved in modelling themselves, making use of the models produced by others to learn.
- 3 At the other extreme are clients, who, having assured themselves that there is some intellectual framework underpinning the work, have no further direct interest in the process – essentially the methodology remains private to the consultant – but they expect learning to emerge from some form of structured debate.

Obviously, there are many shades between these examples but they are all connected by a common aim: to learn how to move forwards and make some improvement. The situation with the greatest potential for exploiting the methodology is one where the consultant is given sufficient space and time to fully involve those concerned in participative problem solving with sufficient skill transfer to ensure that iteration continues to occur long after the departure of the so-called 'expert'. Unfortunately the pace at which modern organizations conduct their affairs rarely permits the luxury of this ideal.

The three examples above can be used to illustrate different applications of the ideas. In the case of those wishing to quickly learn and use the methodology there is little alternative but to use the seven-stage model. The problem here is to ensure that some form of cultural analysis is carried out. To a limited extent this shortcoming can be overcome by promoting the use of CATWOE. Originally developed as a means of assisting the formulation of root definitions it has been found that in use it inevitably opens up wider contextual discussion especially the part of the mnemonic concerned with the 'W' – *weltanschauung* or worldview. The consultant is likely to remain operating in Mode 1 in this situation and should limit his or her ambitions to transferring an elementary version of the methodology. Hopefully there will be sufficient interest and users will go on to discover the developed version – the author is aware of several instances where this has occurred.

In the second example of transparent use where an SSM expert is used to facilitate problem solving using SSM ideas, there is much wider scope for employing the developed form of SSM since the expert will guide its use. Entry to the problem situation can occur in any number of ways ranging from group meetings to one-to-one interviewing or a mixture of both. It is usually helpful to start with a cultural analysis collecting the information through face-to-face interviews and so teasing out important social and political aspects of the situation. Once sufficient information is available the construction of logical models can begin and these can be shared with individuals or groups. It is often helpful to share these in 'unfinished' form engaging others in helping to finish them. This seems to stimulate more interest and involvement as people sense they are making a contribution – and they learn by so doing. CATWOE is again a useful tool in both formulating root definitions with a beneficial by-product of provoking wider contextual considerations. Activity models are helpful devices for carrying messages from one interest group to another: although they may be attached to a particular worldview they are perceived to be a neutral representation of that worldview (since they are not models of the real world), non-threatening and therefore open for constructive debate. There are likely to be a series of iterations as the study moves forwards as different lines of inquiry are pursued and these in turn open up new areas. In this example the consultant is guiding an intervention (Mode 1), publicly using SSM ideas to provide a framework for learning, whilst also privately using that same framework to ensure their own interaction (Mode 2). Through this use of Mode 2 SSM the consultant is maintaining a coherent learning system that remains consistent with the needs of the problem situation as events unfold.

The third example, of totally private use of the methodology where the language of SSM is not used, requires a considerable degree of self-discipline if rigour is to be maintained. This is best achieved by paying close attention to managing the process of inquiry. This means thinking at

two levels of iteration. The first is employing SSM ideas in a practical intervention sense – collecting information, doing modelling (privately), and using the learning to structure a debate in ways (not using systems language) that allow those involved to also learn (Mode 1). The second or meta-level being concerned with the learning system itself – reflecting on the intellectual framework being used and its success in interacting with the problem situation and moving things on towards improvement or an ‘answer’ in the language of the client (Mode 2). In one assignment, involving work for a large corporation, reflecting on the process of inquiry caused the author to halt the work and suggest that the desired outcome was not attainable. The work then took on a new dimension with the client becoming involved in modelling which proved to be helpful.

Finally, experience has shown that access to the methodology and participative problem solving can be facilitated by the use of magnetic media. This is commonly available in the form of hexagon shaped discs which are used in conjunction with metal-backed whiteboards. These can be used to describe the problem situation, recording and mapping out comment, discussion, ideas, etc. These randomly collected points can then be grouped (since the objects tessellate) under theme headings which then can become relevant systems. This approach is particularly useful when working with groups as the map is a record of verbal contributions of each member and this encourages greater ownership of, and commitment to, the process. In a similar way conceptual model building can be done more easily as a group exercise using the same tools. Whilst lacking the elegance of the traditional freehand drawn rich pictures and models these tools go some way to reducing the inhibitions of first-time users towards these activities.

## **Conclusions and learning**

Three main lessons emerge from this reflection on practice. The first concerns the difference between users and developers/experts of the methodology, the second suggests an area for further work on developing the methodology, and the third is about the role of the expert.

- 1 The SSM developers and experts need to remind themselves of the intellectual struggle and effort, often over an extended period of time, to reach the various mileposts that mark the development of SSM. First-time users do not have the benefit of this experience.
- 2 The seven-stage model is widely recognized as a ‘hallmark’ of SSM. Lessons need to be learnt from this success and used to inform further development and research aimed at making the developed version of SSM more accessible. Users have difficulty understanding how to do the cultural analysis and then integrate this with the logic-based stream.
- 3 The role of the SSM-practising consultant is to design and manage a learning system appropriate to the needs of the client and the problem situation. This entails gaining a clear understanding of the needs of the client and the organizational context in which learning about improvements will occur. The methodology is not imposed on the situation but adapted to suit each situation.

## References

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