1
A Skeleton Account of SSM

What is SSM?

The aim of the work which led to the development of Soft Systems Methodology (SSM) was to find a better way of dealing with a kind of situation we continually find ourselves facing in everyday life: a situation about which we have the feeling that 'something needs to be done about this'. We shall call such situations 'problematical', rather than describing them as 'problem situations', since they may not present a well-defined 'problem' to be 'solved' out of existence – everyday life is more complex than that! A company might feel that it needs to stimulate sales, perhaps by introducing a new product; or should they bid for the equity of a smaller rival? A university may feel that its student intake is too biased towards students from middle-class homes. What are the implications of changing that? A government may struggle to define legislation which would increase the feeling of security on the streets, given the threat of terrorism, without diminishing civil liberties. A local council may be receiving complaints that the delivery of its services is not sufficiently 'citizen-friendly'. What should it do? A head teacher may wonder how to decide whether to take on the responsibility for providing school meals (the school benefiting from any surplus generated) or to leave that function to the local education authority. An individual may develop a sense of unease about the future viability of the firm he or she works for, and wonder whether to look for a job elsewhere. All these are 'problematical situations'. They could be tackled in various ways: by appealing

to previous experience; intuitively; by randomly thrashing about (never a shortage of that in human situations); by responding emotionally; or they could be addressed by using SSM.

So what is it? It is an organized, flexible process for dealing with situations which someone sees as problematical, situations which call for action to be taken to improve them, to make them more acceptable, less full of tensions and unanswered questions. The 'process' referred to is an organized process of thinking your way to taking sensible 'action to improve' the situation; and, finally, it is a process based on a particular body of ideas, namely *systems* ideas.

That these ideas have proved themselves to be useful in dealing with the complexity of the social world is hardly surprising. Social situations are always complex due to multiple interactions between different elements in a problematical situation as a whole, and systems ideas are fundamentally concerned with the *interactions* between parts of a whole. So it is systems ideas which help to structure the thinking. (However, the way systems ideas are used within SSM is fundamentally different from the way they inform the various earlier systems approaches developed in the 1950s and 1960s, as we shall see below.)

In order to ensure that the previous two paragraphs are clear, we need to unpack them somewhat, and say a little more about the crucial elements within them, if this chapter is to fulfil its aim of presenting a broad-brush account of SSM as a whole. Four elements in the paragraphs above will be expanded: 'everyday life and problematical situations'; 'tackling such situations'; a 'flexible process', and 'the use of systems ideas'.

Everyday Life and Problematical Situations

As members of the human tribe we experience everyday life as being quite exceptionally complex. We feel ourselves to be carried along in an onrushing

turbulent stream, a flux of happenings, ideas, emotions, actions, all mediated through the slippery agency of language, all continually changing. Our response to our immersion in this stream is not simply to experience it. Beyond that, we have an innate desire to try to see it, if we can, as *meaningful*. We *attribute* meaning to it – the ability to do this being one of the characteristics which marks us out as human. Part of this meaning attribution is to see chunks of the ongoing flux as 'situations'. Nothing is intrinsically 'a situation'; it is our perceptions which create them as such, and in doing that we know that they are not static; their boundaries and their content will change over time. Some of the situations we perceive, because they affect us in some way, cause us to feel a need to tackle them, to do something about them, to improve them.

Tackling Problematical Situations

As we tackle a situation we see as problematical, we are intervening in order to take action intended to bring about improvement. In order to do that sensibly we need to have a clear idea of what it is we are intervening in. This means having a clear view of the nature of the flux which constitutes everyday life. We have already described it as complex, changing, and having multiple strands: events, ideas, emotions, actions. To this we can add an answer to the question: What then happens when we intervene in a part of the flux seen as a problematical situation?

When we interact with real-world situations we *make judgements about them*: are they 'good' or 'bad', 'acceptable' or 'unacceptable', 'permanent' or 'transient'? Now, to make any judgement we have to appeal to some criteria or standards, these being the characteristics which define 'good' or 'bad' etc. for us. For example, an 'eco-warrior' would judge any economic activity 'good' only if it met the environmentalists' criteria for 'good', namely 'environmentally friendly' and 'sustainable'. A 'capitalist' would see an economic activity as 'good' if it were 'profitable'. And where do such criteria come

from? They will be formed partially by our genetic inheritance from our parents – the kind of person we are innately – and, most significantly, from our previous experience of the world. Over time these criteria and the interpretations they lead to will tend to firm up into a relatively stable outlook *through which* we then perceive the world. We develop 'worldviews', built-in tendencies to see the world in a particular way. It is different worldviews which make one person 'liberal', another 'reactionary'. Worldviews cause one observer's 'terrorism' to be another's 'freedom fighting'. Such worldviews are relatively stable but can change over time. Thus a paranoid person whose worldview is 'this hostile world owes me a living' might become a more integrated member of society as a result of experiencing love and generosity.

This concept of worldview (the German *Weltanschauung* being the best technical word for it) is the most important concept in understanding the complexity of human situations, and indeed, the nature and form of SSM.

A Flexible Process

It is obvious from the argument so far that any approach able to deal with the changing complexity of real life will have to be flexible. It could never be reduced to a sequence of steps, which might be handed over to an intelligently programmed robot. It needs to be flexible enough to cope with the fact that every situation involving human beings is unique. The human world is one in which nothing ever happens twice, not in *exactly* the same way. This means that an approach to problematical human situations has to be a methodology rather than a method, or technique. A methodology, as the word indicates, is a logos of method; that is to say it is a set of ongoing principles which can be adapted for use in a way which suits the specific nature of each situation in which it is used. SSM provides a set of principles which can be both adopted and adapted for use in any real situation in which people are intent on taking action to improve it.

The Use of Systems Ideas

As stated above, systems ideas concern interaction between parts which make up a whole; also, the complexity of real situations is always to a large extent due to the many interactions between different elements in human situations. So it is not surprising that systems ideas have some relevance to dealing with real-world complexity (though they are only very rarely useful in *describing* that complexity).

The core systems idea or concept is that of an adaptive whole (a 'system') which can survive through time by adapting to changes in its environment. The concept is illustrated in Figure 1.1. A system S receives shocks from

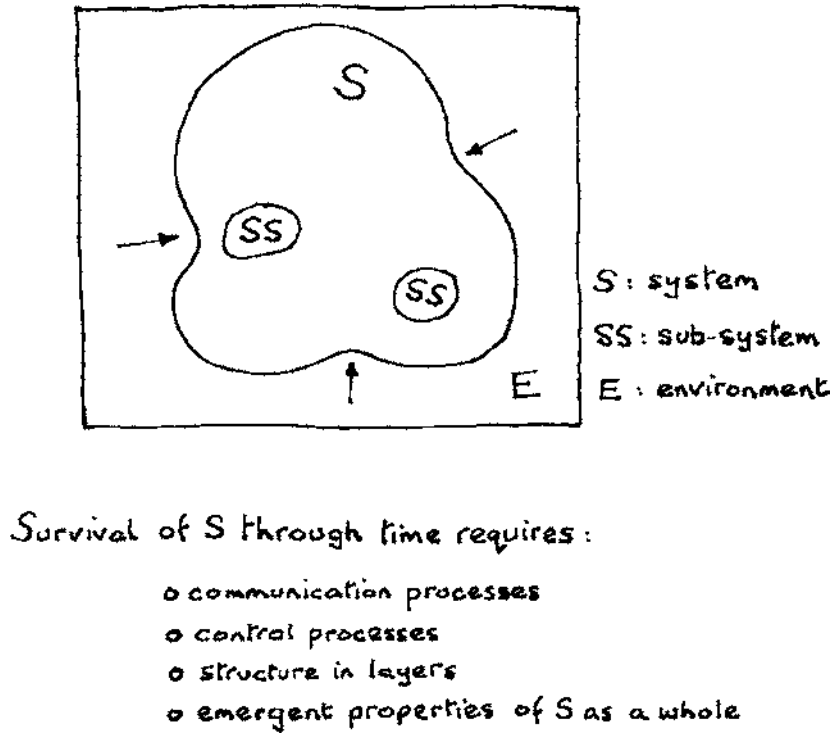

Figure 1.1 The core systems concept: an adaptive whole

its changing environment E. If it is to survive it requires *communication processes* (to know what is going on) and *control processes* (possible adaptive responses to the shocks). Also, the system may contain sub-systems SS, or may itself be seen by a different observer as only a sub-system of some wider system. The idea of a *layered structure* is thus fundamental in systems thinking. Finally, what is said to be a system must have some properties as a single whole, so-called *emergent properties*. (Thus the parts of a bicycle, when assembled correctly, and only then, produce a whole which has the emergent property of being a vehicle, the concept 'vehicle' being meaningful only in relation to the whole.) These four italicized phrases represent the core of systems thinking. So how can it be used here?

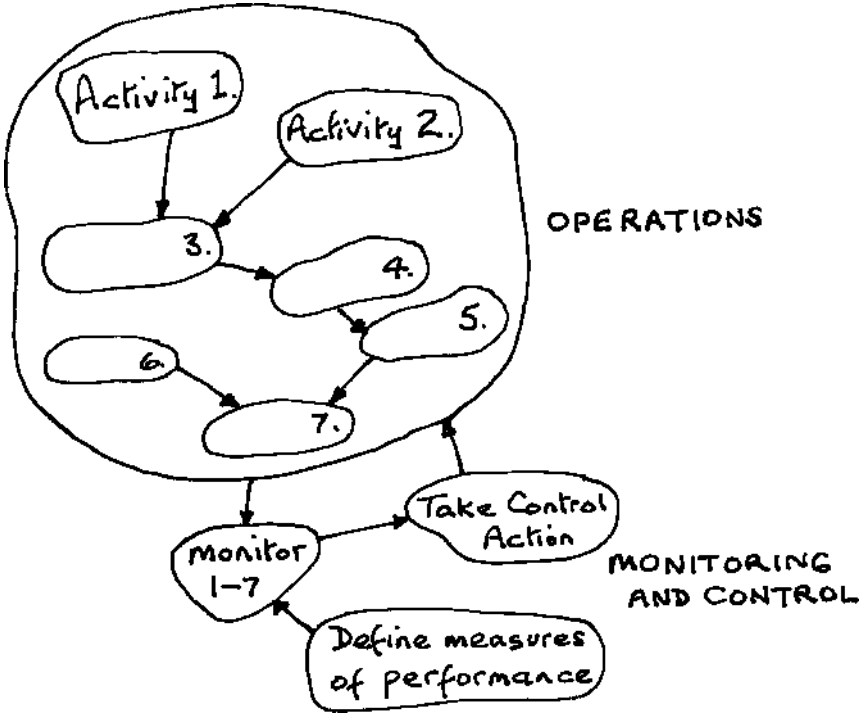

Figure 1.2 The general form of a purposeful activity model

The relevance of this kind of thinking to SSM emerged when it was realized that every single real-world problematical situation, whether in a small firm making wheelbarrows, a multi-national oil company, or in the National Health Service (which employs more than a million people) has one characteristic in common. All such situations contain people trying to act *purposefully*, not simply acting by instinct or splashing about at random. From this observation comes the key idea of *treating purposeful action as a system*. A way of representing purposeful action as a system, i.e. an adaptive whole (in line with Figure 1.1) was invented. Figure 1.2 shows its general form.

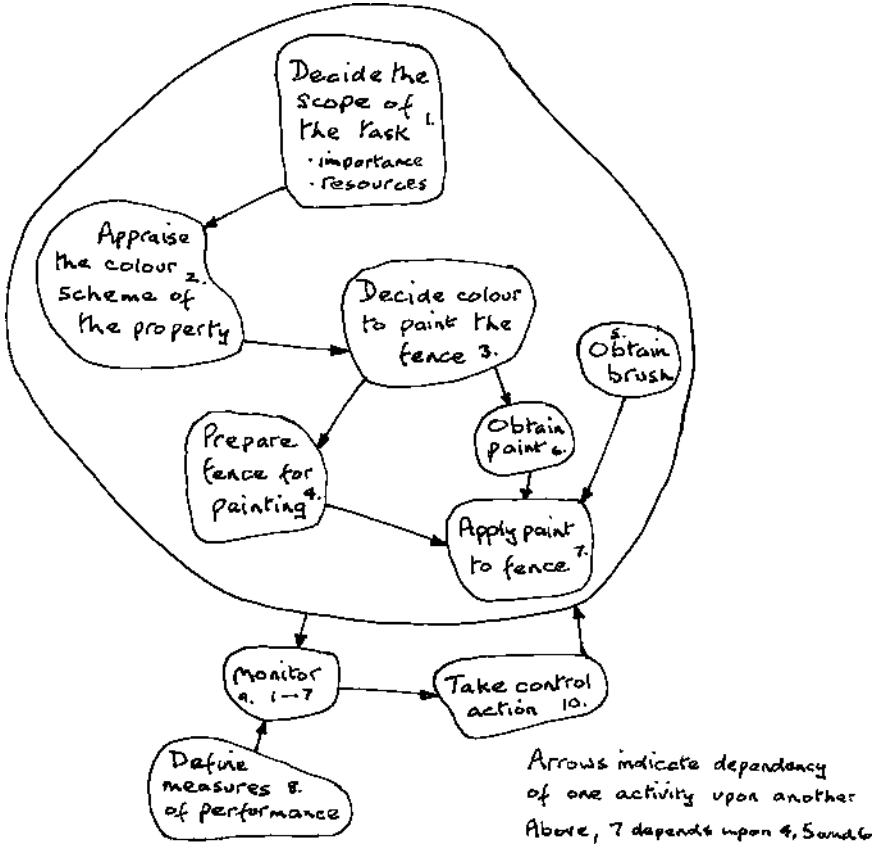

Figure 1.3 A simple example of an activity model: a system to paint the garden fence by hand painting

A logically linked set of activities constitute a whole – its emergent property being its purposefulness. The activities concerned with achieving the purpose (the operations) are monitored against defined measures of performance so that adaptive control action (to make changes) can be taken if necessary.

Figure 1.3 shows a trivial example to illustrate the concept. With regard to Figure 1.2, the 'measure of performance' might be the degree to which fence painting enhances the appearance of the property or, perhaps, 'good' or 'bad' might be defined according to whether or not the neighbours complain about it. This model, then, is a 'purposeful activity model'.

The model in Figure 1.3 is essentially within the worldview of whoever would do the fence painting. It is an instrumental model which spells out what is entailed in painting a garden fence. It could express the householder's worldview: 'I can do useful DIY jobs to improve my property.' However, if painting the fence were an issue in a real situation other worldviews would be relevant, even in an example as trivial as this – for example, in this case, those of the neighbours or the partner of the fence-painter. In general there will always be a number of worldviews which could be taken into account leading to a number of relevant models.

Suppose, for example, you were carrying out an SSM study of the future of the Olympic Games. For anything as complex as this global phenomenon it is obvious that it could be looked at from the perspective of worldviews attributed to the International Olympic Committee, the host country, the host city, the athletes, the athletes' coaches, the spectators, hot dog sellers, commercial sponsors, those responsible for security, television companies, a terrorist group seeking publicity for their cause, etc. This list could go on and on; there could never be a single model relevant to all these different interests.

An important consequence flows from this: these purposeful activity models *can never be descriptions* of (part of) the real world. Each of them expresses

one way of looking at and thinking about the real situation, and there will be multiple possibilities. So how can such models be made useful? The answer is to see them as *devices* (intellectual devices) which are a source of *good questions to ask about the real situation*, enabling it to be explored richly. For example, we could focus on the differences between a model and the situation, and ask whether we would like activity in the situation to be more, or less, like that in the model. Such questioning organizes and structures a discussion/debate about the real-world situation, the purpose of that discussion being to surface different worldviews and to seek possible ways of changing the problematical situation for the better. This means finding an accommodation, that is to say a version of the situation which different people with different worldviews could nevertheless live with. Given the different worldviews which will always be present in any human situation, this means finding possible changes which meet two criteria simultaneously. They must be arguably *desirable*, given the outcomes of using the models to question the real situation, but must also be culturally *feasible* for these particular people in this particular situation with its unique history and the unique narrative which its participants will have constructed over time in order to make sense of their experience. Figure 1.4 illustrates this.

In summary, then, we have:

- a problematical real-world situation seen as calling for action to improve it;
- models of purposeful activity *relevant* to this situation (not describing it);
- a process of using the models as devices to explore the situation;
- a structured debate about desirable and feasible change.

This gives the bare bones of the process of SSM, whose shape can now be described.

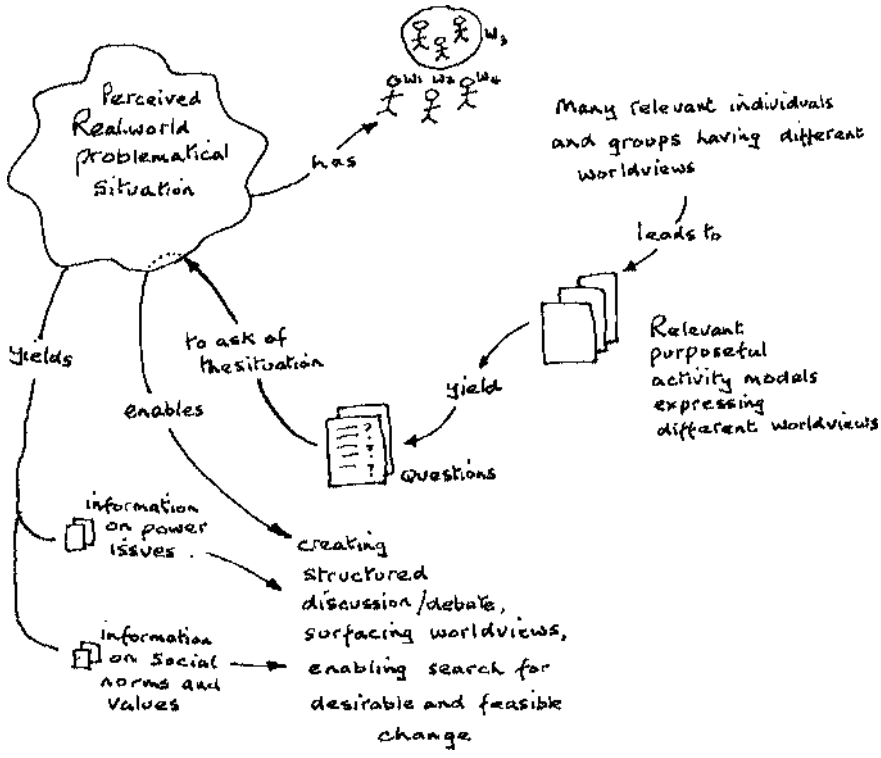

Figure 1.4 SSM's basic process

What is the SSM Process?

The SSM process takes the form of a cycle. It is, properly used, a cycle of learning which goes from finding out about a problematical situation to defining/taking action to improve it. The learning which takes place is social learning for the group undertaking the study, though each individual's learning will be, to a greater or lesser extent, personal to them, given their different experiences of the world, and hence the different worldviews which they will bring to the study. Taking action as a result of the study will of course change the starting situation into a new situation, so that in principle the cycle could begin again (a relevant system then being 'a system to make

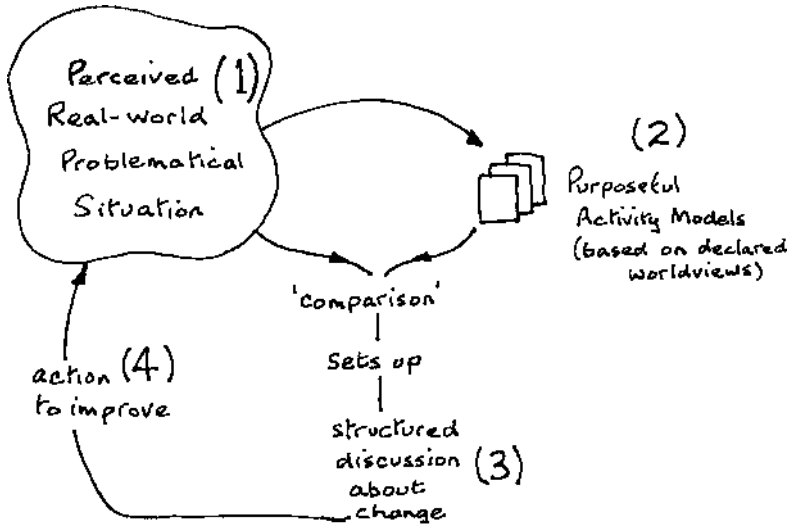

Figure 1.5 The iconic representation of SSM's learning cycle

these changes'). SSM is thus not only a methodology for a specially set-up study or project; it is, more generally, a way of managing any real-world purposeful activity in an ongoing sense.

The SSM cycle is shown in Figure 1.5, which eventually emerged as its classic representation. It contains four different kinds of activity:

1. Finding out about the initial situation which is seen as problematical.
2. Making some purposeful activity models judged to be relevant to the situation; each model, as an intellectual device, being built on the basis of a particular pure worldview.
3. Using the models to question the real situation. This brings structure to a discussion about the situation, the aim of the discussion being to find changes which are both arguably desirable and also culturally feasible in this particular situation.
4. Define/take the action to improve the situation. Since the learning cycle is in principle never-ending it is an arbitrary distinction as to whether the end of a study is taken to be defining the action or actually carrying

it out. Some studies will be ended after defining the action, some after implementing it.

This description of the cycle as activities (1) to (4) may give a false impression that we are describing a sequence of steps. Not so. Although virtually all investigations will be initiated by finding out about the problematical situation, once SSM is being used, activity will go on simultaneously in more than one of the 'steps'. For example, starting the organized discussion about the situation (3) will normally lead not only to further new finding out (1), perhaps focused on aspects previously ignored, but also to further new choices of 'relevant' systems to model. In real life, an investigation which sets out narrowly to improve, say, aspects of product distribution in a manufacturing company's distribution department, may well later sweep in issues concerning, perhaps, communications between production and marketing departments. Figure 1.6 illustrates a typical pattern of activity of the kind which emerges as an investigation digs deeper.

Figure 1.6 shows an on-going 'finding out' activity, three bursts of model building, discussion fed by both the models and the finding out, which itself leads to more finding out and more modelling. The final (fourth) burst of modelling shown here as an example follows from defining the 'action to improve' and would consist of purposeful activity models relevant to carrying out the action agreed.

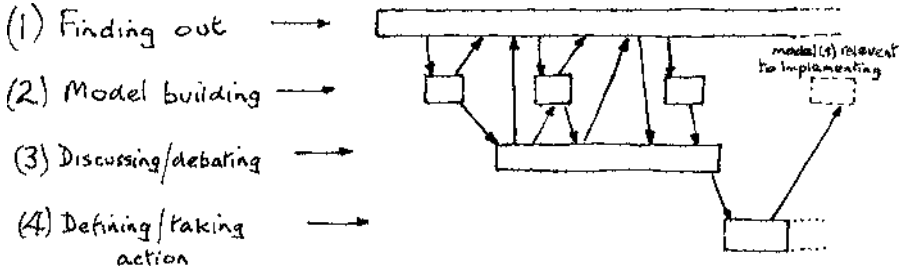

Figure 1.6 A typical pattern of activity during an SSM investigation

Finally, in describing the SSM cycle, we could add (though this is really a point from the end of this book) that as users of SSM become more sophisticated they treat Figure 1.5 not at all as a prescription to be followed, but as a model to make sense of their experience as they mentally negotiate their way through the problematical situation.

What Can SSM be Used for?

The application area for SSM is very broad. This is not due to megalomania on the authors' part. Rather it stems from the wide applicability of two key ideas behind SSM. One of these is to create a process of *learning your way* through problematical situations to 'action to improve' – a very general concept indeed. The other is the idea that you can make sure this learning is organized and structured by using, as a source of questions to ask in the real situation, models (systems models) of purposeful activity. This is because every real-world situation contains people trying to act purposefully, intentionally. It is the sheer generality of purposeful action – the core of being human – that makes the area in which SSM can be used so huge.

In Part Two, the stories of SSM use come from all sizes of company from small firms to large corporations, from organizations in both private and public sectors, including the National Health Service. Chapter 4 describes uses of SSM in the world of information systems and information technology, where it is much used. This derives from the fact that for any purposeful activity model (Figure 1.3 being a noddy example) you can ask of each activity: What information would support doing this activity? And what information would be generated by doing it? Since information is what you get when you attribute meaning to data in a particular context, and meaning attribution depends upon worldview, SSM's strong emphasis on worldview explains its relevance to this field.

In summary, SSM can be used in any human situation which entails thinking about acting purposefully, and is especially useful in any situation in which it is helpful to lift the level of discussion from that of everyday opinions and dogma to that level at which you are asking: What taken-as-given worldview lies behind these assertions of opinion?

Is SSM Mature?

Obviously it is never possible to claim that the development of any approach to human inquiry is 'finished', though some features of any such process may become so taken-as-given as to appear permanent. For example, in the inquiry process of natural science, if you are testing a new drug you give some patients the drug while others receive a placebo. The difference between the group ingesting the drug and the so-called 'control' group taking the placebo tells you what effects the drug produces (given a statistically significant sample size). This pattern would seem to be a permanent feature of scientific experiment. In applied social science, where SSM sits, the situation is less definite. Nevertheless, after hundreds of studies the core processes of SSM do now appear to be well-established, though the application area continues to expand. In the early days each significant study was likely to cause some rethinking of the process itself; but such changes became increasingly rare over the 30-year development period. We now regard it as a mature process.

The most recent addition to the literature about its development describes the use of SSM both in relation to the perceived *content* of the situation in question – SSM (c) – and in relation to the *process* of carrying out the inquiry itself – SSM (p) – (described in Chapter 2). This is in a paper published in 2006. But this is a case of the literature lagging behind practice, as these twin uses of SSM have been recognized and exploited by those developing the approach since the early 1980s.

So SSM is now considered mature enough to justify writing this book.

How was SSM Created?

The classic way of doing research comes from natural science: set up a hypothesis and then test it experimentally. It is not easy to transfer this model of research to the gloriously rich social and human arena, though strenuous efforts to do that have been made over many years. SSM was developed using an alternative model of research, one more suitable for social research at the level of a situation, group or organization, namely 'action research'. In this kind of research you accept the great difficulty of 'scientific' experimental work in human situations, since each human situation is not only unique, but changes through time and exhibits multiple conflicting worldviews. Hence the pattern for the action researcher is to enter a human situation, *take part* in its activity, and use that experience as the research object. In order to do that, to do more than simply return from the research with a one-off story to tell, it is necessary to declare in advance the intellectual framework you, the researcher, will use to try to make sense of the experience gained. Given such an explicit framework, you can then describe the research experience in the well-defined language of the framework. This makes it possible for anyone outside the work to 'recover' it, to see exactly what was done and how the conclusions were reached. This 'recoverability' requirement is obviously not as strong as the 'repeatability' criterion for scientific findings within natural science. But then, human situations are very much more complex than the phenomena studied in physics and chemistry labs! It is the declared framework and the recoverability criterion which clearly separate accounts of well-organized action research from novel writing – which, alas, too much published social research resembles.

In the action research which produced SSM the initial declared framework was the Systems Engineering approach developed by the Bell Telephone Company from their own case histories. Systems Engineering (SE) is a process

of naming a 'system' (assumed to be some complex object which exists or could exist in the real world), defining its objectives, and then using an array of techniques developed in the 1950s and 1960s to 'engineer' the system to meet its objectives. This framework was rapidly found to be poverty-stricken when faced with the complexity of human situations. It was too thin, not rich enough to deal with fizzing social complexity.

The SE framework was modified (and enriched) in the light of and in direct response to real-life experiences. Eventually, we had in our hands an adequately rich framework, but it was far removed from the starting point in SE. It became known as Soft Systems Methodology. It then took some time for even its pioneers to realize just how radical the shift had been from SE to SSM. Having introduced the notion of 'worldview' – essential in dealing with human social complexity – we were thereafter thinking of systems models not as descriptions of something in the real world but simply as devices (based on worldview) to organize a debate about 'change to bring about improvement'. That was the key step in finding our way to SSM. This important shift in thinking is not abstruse, but it turns out to be very difficult for many people to grasp, simply because everyone is so used to the casual everyday-language use of the word 'system'. In ordinary talk we constantly refer to complex chunks of the everyday world as systems, even though they do not come close to meeting the requirements of that concept. We speak of 'the education system', 'health-care systems', 'the prison system', etc. using the word 'system' simply to indicate a chunk of reality which seems to be very complex but is, in some vague sense, a whole, something which might be better 'engineered'. Figure 1.7 gives a visual indication of the shift in thinking as SE was transformed into SSM.

At the starting point (SE) in Figure 1.7 (which ignores worldviews), 'systems' are names for things in the world which, given precise objectives, can be engineered to achieve them. At the end point (which accepts different world-

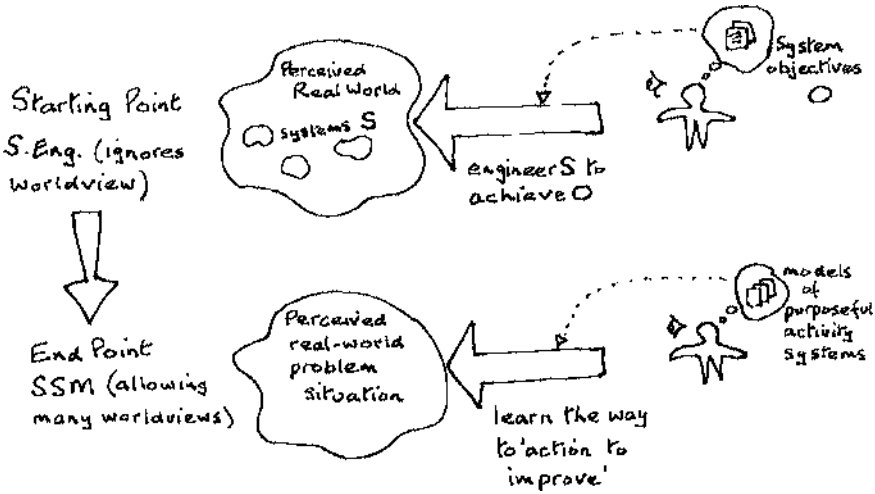

Figure 1.7 The shift in thinking entailed in developing SSM

views), 'systems' are devices used in a learning process to define desirable and feasible 'action to improve'.

Once the end point in Figure 1.7 was reached, and the SSM framework had been established, it was further developed, modified and honed in a few hundred new experiences. Out of this came a model which captures all of these developmental experiences. The model, known as the LUMAS model, is shown in Figure 1.8. (It is in fact a generic model for making sense of any real-world application of any *methodology*, remembering that that word covers a set of principles which need to be embodied in an application tailored to meet the unique features of a particular situation.)

LUMAS stands for Learning for a User by a Methodology-informed Approach to a Situation. In order to 'read' this model, start from the user (U) in the centre. He or she, perceiving a problem situation (S) and appreciating the methodology (M), tailors the latter to the former to produce the specific approach (A) to be used in this situation (S). This not only produces an improved situation but also yields learning (L). This will change the user,

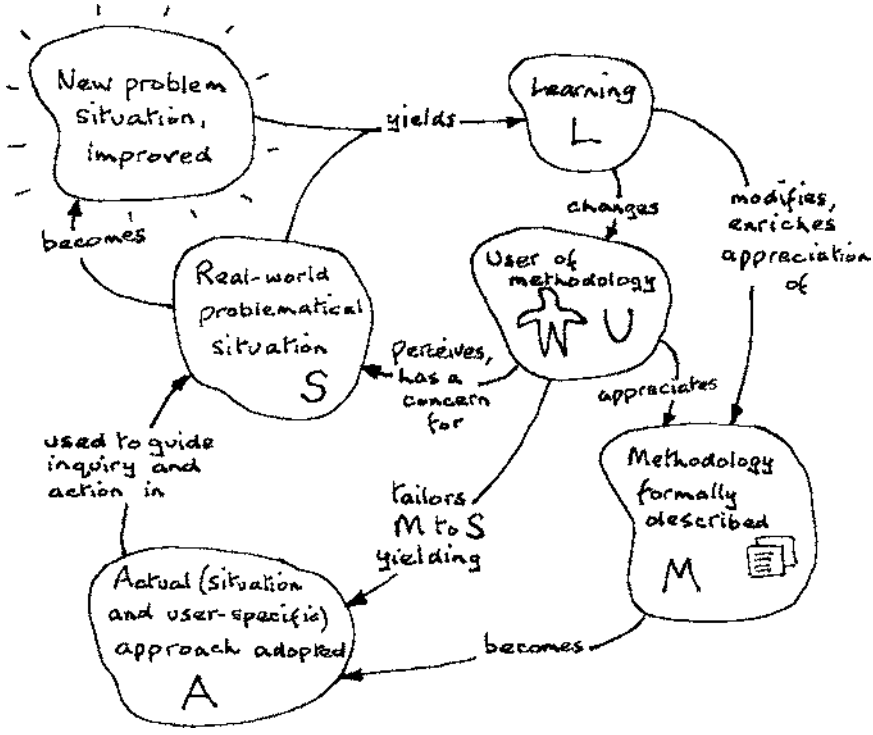

Figure 1.8 The LUMAS model – Learning for a User by a Methodologically-informed Approach to a Situation

who has gained this experience, and may also modify or enrich appreciation of the methodology. Every use of SSM can in principle be described in the language of this model. It is the gradually diminishing activity, over the years, of development occurring along the arrow which links L and M that makes it legitimate to describe SSM as mature.

How Does SSM Differ from Other Systems Approaches?

As described above, changes had to be made to Systems Engineering when it proved too blunt an instrument to deal with the complexity of human

situations. Those changes explain SSM's difference from the other systems approaches developed in the 1950s and 1960s. SE is an archetypal example of what is now known as 'hard' systems thinking. Its belief is: the world contains interacting systems. They can be 'engineered' to achieve their objectives. This is the stance not only of SE; this thinking also underpins classic Operational Research, RAND Corporation 'systems analysis', the Viable System Model, early applications of System Dynamics and the original forms of computer systems analysis. None of these approaches pays attention to the existence of conflicting worldviews, something which characterizes all social interactions. In order to incorporate the concept of worldview into the approach being developed, it was necessary to abandon the idea that the world is a set of systems. In SSM the (social) world is taken to be very

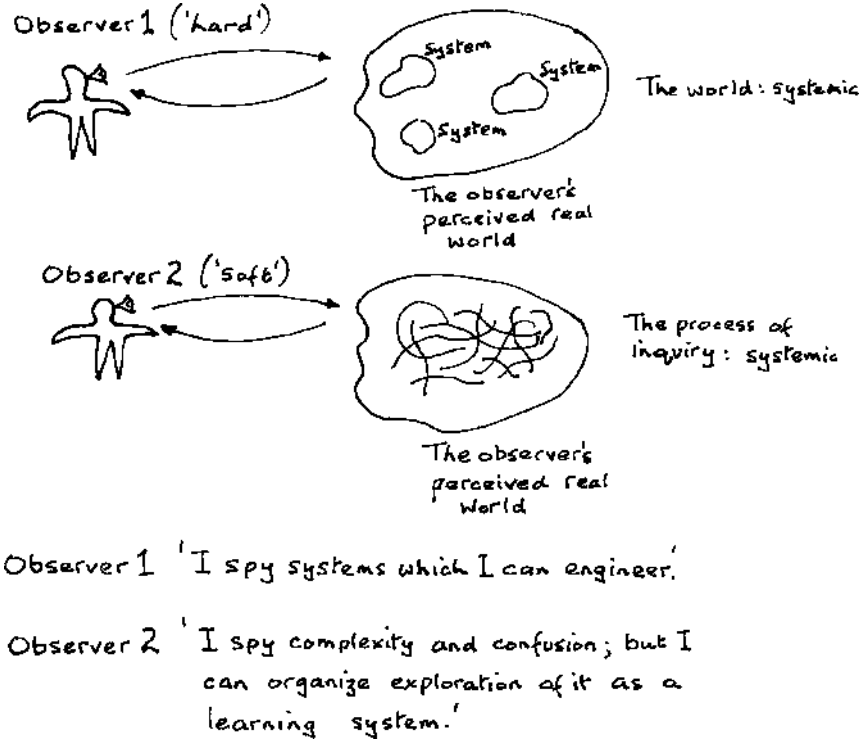

Figure 1.9 The 'hard' and 'soft' systems stances

complex, problematical, mysterious, characterized by clashes of worldview. It is continually being created and recreated by people thinking, talking and taking action. However, our coping with it, our process of inquiry into it, can itself be organized as a learning *system*. So the notion of systemicity ('systemness') appears in the process of inquiry into the world, rather than in the world itself. This shift created 'soft' as opposed to 'hard' systems thinking, the different stances adopted by the two being shown in Figure 1.9, itself another version of Figure 1.7.

This brings us to the end of a skeletal account of SSM as a whole. The next chapter expands on this, describing the techniques used in the cyclic process in detail. Meanwhile it seems worthwhile to try to summarize the broad account of SSM in a couple of sentences.

> SSM is an action-oriented process of inquiry into problematical situations in the everyday world; users learn their way from finding out about the situation to defining/taking action to improve it. The learning emerges via an organized process in which the real situation is explored, using as intellectual devices – which serve to provide structure to discussion – models of purposeful activity built to encapsulate pure, stated worldviews.