

Introducing soft systems methodology plus (SSM+): why we need it and what it can contribute

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Abstract

There are many complicated and seemingly intractable problems in the health care sector. Past ways to address them have involved political responses, economic restructuring, biomedical and scientific studies, and managerialist or business-oriented tools. Few methods have enabled us to develop a systematic response to problems. Our version of soft systems methodology, SSM+, seems to improve problem solving processes by providing an iterative, staged framework that emphasises collaborative learning and systems redesign involving both technical and cultural fixes.

Four domains of deep-seated problems in health care

Wherever you look in the health system you find complex, unresolved issues. Most are deep-seated, systems problems. In this paper we identify four distinct domains or levels at which these problems occur and discuss common approaches which have been promoted as being able to resolve them. We propose that these solutions have had limited success often because they ignore the complex social systems in which problems are embedded. Soft systems methodology (SSM+) is presented as a staged approach for health care by which sustainable solutions to difficult problems may be developed and enacted.

We have ordered the four problem domains in a hierarchy for ease of explication, but recognise that the world itself is messy, and not as amenable to precise a categorisation as this suggests. First, there is the problematic of high-level policy formulation and its implementation (eg, Lindblom 1959; Alford 1975). Formulation is invariably the purview of politicians, ministerial staff, senior government officers, professional associations and other groups interested in influencing professional practices and the organisational frameworks, structures and processes of the health sector. Policy formulation is intrinsically political and contested.

Implementation problems are well known, and were famously recognised by Lipsky (1980). He coined the term *street level bureaucrats* to capture the discretion and relative autonomy of professionals in re-construing and applying policy at the local level. This means that even in rare cases where formulators promulgate relatively unambiguous policy it will be interpreted and actioned inconsistently.

The second is the organisational or institutional domain. This is represented by various administrative or geographic infrastructural arrangements by which care is organised. Here, area health services, regional groupings, district health clusters and network configurations administer, plan, fund and manage services by

mobilising medical, nursing and allied health staff groups within hospitals, aged care facilities, community health centres and the like. Organisational and institutional entities interface with each other in complex and sometimes confusing ways, sometimes collaboratively, sometimes co-operatively. Well-known problems central to this domain include a perceived lack of resources, fragmentation, multiple agendas, poor practices, duplication and error. For recent discussions, see the Australian Senate Community Affairs References Committee (2000; 2001), Braithwaite and Hindle (2001) and Duckett (2000).

The third domain is the level at which work is enacted – where groups of clinical staff and patients interface. Conceptually, this is usually thought of as the clinical service or unit. Although multi-disciplinary teams are normatively assumed, there are multiple clinical hierarchies and professional and social sub-structures (Degeling *et al* 1998). Problems at the service or unit level include excessive workloads, pressure to focus on throughput and efficiency at the expense of quality, poor communication across professional groups and intense customer demands expressing needs that cannot all be met.

The fourth domain is at the level of the individual. This is the point where the individual health professional interfaces with the patient. Problems here include limits on the wish to provide services to the full extent that clinical training suggests, difficult choices, complex decisions for which there is sometimes limited evidence, disengagement from team processes, excessive individualism, poor morale and dissatisfaction.

Four solution approaches that have not worked to the extent hoped

Responses to this suite of problems are hard to categorise, but we have observed four dominant approaches. The first is the political imperative. Instead of solving problems that are difficult and require long-term rather than short-term strategies, people seek to solve problems of greatest interest to them by playing the power game. Some players invariably act from their own priorities. Their main goal is to promote the interests of their subgroup at the expense of others. Key processes here are positioning and advancing oneself or one's primary group relative to competitors, acquiring or mobilising resources, and exercising influence and exerting power in pursuit of one's objectives. Much of this behaviour is unseen: withholding information, guilefully influencing agendas, lobbying behind closed doors, negotiating for financial resources to flow in a desired direction, securing authority and subtly reinforcing warranted or punishing unwarranted behaviour in others. Sax (1984) drew attention to this phenomenon, and his account remains a piercing depiction of how self-interest operates.

The second approach is based on economic reasoning. Health economists, like their counterparts in other sectors, tend or choose to assume that people are motivated primarily through financial incentives and that almost everything valuable or useful to study is reducible to dollars, throughput, productivity and efficiency. A lack of appreciation of human behaviour often resonates in health economic literature. Health economic strategies frequently simplify what drives behaviour and behaviour change in professionals. Examples that show this starkly include casemix funding of acute services, managed care and the separation of purchaser from the provider of health care services. At various times and in various health systems, all of these have induced an emphasis on volume over quality, adverse consequences, gaming responses, reduced levels of collaboration amongst stakeholders and increased levels of divisiveness.

The third major approach to resolving health care's problems is represented in the biomedical or scientific way of thinking. Adherents to this solution say that, whatever the problem, we can reduce it to a formal study. This will preferably be constituted as a randomised trial or double blind experiment. By this means we can be confident that we better understand the situation under controlled conditions. Supporters of this kind of approach tend to downplay the importance of organisational and professional cultures and situation-specific practices. The reductionist and positivist thinking inherent in scientifically oriented research tends to discount the complicated nature of health care systems and the fact that most problems are embedded in complex processes not amenable to studies which artificially isolate a problem from its ecological and social weave. Proponents also assume that a scientifically controlled study will provide sound evidence to underpin professional practice changes. Acceptance of evidence is usually problematic for many reasons, including the environmental factors noted above.

The fourth response is what we label the managerialist, business-oriented approach. A smart young thing in a suit and trained in a business school, or working for a consulting company, comes to an identified problem with a briefcase full of tools. These tools are instantly recognisable and are often persuasive: TQM, organisational restructuring, strategic management, change management, business process reengineering, and decentralisation (or centralisation) of services. These are generic ideas that are equally talked about in other sectors such as banking, manufacturing and telecommunications.

The extent to which these have worked in health is unknown, but there is a growing unease about their contribution. Some Chinese cultures, including those in Hong Kong and Singapore, now talk about the “MBA son”. This is someone, usually the eldest male, who is designated to inherit the family business. He is funded by the family to attend an international business school and returns to Hong Kong or Singapore and spends the next five years destroying (‘reinventing’) the family business by introducing ‘one size fits all’ techniques which are wholly unsuited to the context, culture and practices of the business. In health care, there is widespread dissatisfaction with this managerialist type of approach, yet managers and policymakers continue to place heavy reliance on consulting services that promote them.

Where does this lead?

What these putative solutions have in common is that they represent fragmented and fragmenting attempts to change or influence behaviour, systems, structures, processes or practices. Figure 1 provides a grid of the four problem domains mapped against each of the four solution types, with examples in each of the sixteen cells this matrix creates.

Figure 1: four problem domains and solution approaches

Problem domain	Solution approaches			
	Exercise power, influence	Introduce economic incentives and disincentives	Advance biomedical and scientific data	Proffer managerialist and business-oriented ideas
<i>Policy formulation and implementation</i>	Shape the policy agenda in one’s desired direction	Initiate a system to separate purchaser from provider	Sponsor clinical trials to develop practice guidelines	Introduce a system-wide policy for TQM
<i>Organisational and institutional</i>	Dominate other organisations or workplace opponents	Start competitive casemix funding among acute care organisations	Promote hospital league tables comparing performance	Create clinical directorate structures in large hospitals
<i>Clinical service and clinical unit</i>	Fight for resources for your clinical service or unit at the expense of others	Conduct cost-benefit analysis on one service compared with another	Construct multi-disciplinary clinical pathways for specific disease types	Carry out business process re-engineering for clinical services
<i>Clinician-patient interface</i>	Seek technology funding for your particular patients’ needs	Undertake rationing for individual patients based on cost-utility studies	Publish report cards showing outcome rates of individual practitioners	Design an appraisal system to measure individual clinician performance

Each of the four solution approaches to resolving problems has had limited success because the problems that we described earlier persist. We continue to have people and groups in health care who pursue self-interest through exercising personal power and influence, mobilise economic strategies, advance biomedical/scientific responses or proffer the managerialist tool kit. Although it may seem hard to generalise across the myriad of projects and interventions, the approaches we have seen people apply in the health sector clearly lack something. The proof is in the pudding: there remain widespread problems of policy implementation, poorly integrated services across organisational/institutional settings, too few examples of successful multi-disciplinary teams and a deal of professional and patient dissatisfaction with individual services. Even if the four approaches were used in concert on a large-scale problem, it seems likely they would produce inconsistent, flawed or otherwise unsatisfactory outcomes.

We need a set of solutions to confront the deep-seated problems in health care. These solutions must produce sustainable outcomes and build capacity among participants. To do this would require as a minimum a solutions set which exhibits characteristics like those listed in Figure 2.

Figure 2: core characteristics of a solutions set to deep-seated health care problems

Characteristic	What would be needed
Multi-staged	A structured, multi-faceted approach to problem identification and resolution
Involvement	Engagement of a wide range of stakeholders in decision processes
Collaborative learning	Encouragement and opportunity for those involved to learn together
Systems knowledge	Understanding about the nature of complex systems and how people behave within them
Culture emphasised	An appreciation of what culture is, what it 'does', and how it might be changed
Co-ordinated effort	The alignment of system-wide, organisational, institutional and individual interests and goals
Transparency	Explicit statements about the rules people are playing under
Importance of the social	A recognition that connections people make – their relationships with others – are at the heart of complex systems
Iterative nature	To grasp that the system is always emergent – there are no definitive outcomes or resolutions.

We also need a framework – some might say a model, or a strategy, or a *modus operandi* – by which we can operationalise such a solutions set. In short, we need a way to proceed.

There are two paths that can be taken in the light of the analysis thus far. One is the journey to despair. On pessimistic days many, perhaps all of us have thought that securing solutions to the kinds of entrenched problems we have identified is altogether too difficult, and that there are no durable answers to health care's ills. Things are the way they are, and we should just accept it.

The other is to believe that there are some strategies that can achieve results and offer hope, and try to identify them. Soft systems methodology (SSM) represents one set of ideas that has demonstrated how progress can be made in resolving difficult problems embedded in complex social systems. It has been polished and refined over the last thirty years. It has not been used extensively in the health sector.

The first two authors have developed a set of SSM concepts with a particular eye on the problems discussed above. It is described in a discussion paper titled *Soft systems methodology plus (SSM+): a guide for Australian health professionals* (Hindle and Braithwaite 2001; see also Braithwaite 2001). Our refined approach is labelled soft systems methodology plus (SSM+) and the discussion paper, although technical in nature, outlines SSM+ for policymakers, clinicians and managers in health care circles.

Enter SSM

Before discussing SSM+, we will briefly describe SSM. Checkland and his colleagues (Checkland 1972; 1981; Checkland and Scholes 1990; Hindle, Checkland, Mumford and Worthington 1995) took many ideas from systems theory and incorporated them into an approach now termed SSM. It takes account of much of what is important in the core characteristics listed in Figure 2, and provides a way of thinking and acting that is generally considered to be sufficiently comprehensive and flexible to be relevant to many kinds of problem situations. In outline, there is an iterative process that incorporates four main stages, as follows:

- Developing a 'rich' picture of the situation that is considered problematical (that is, ensuring many different perspectives are elicited)
- Developing systems models (pictures or diagrams) of one or more aspects of the problem situation, as a basis for discussion and learning about 'the real world'

- Comparing people's systems models with other people's models as a means to understand the real world, and to learn about the real world
- Identifying opportunities for improvement, and making changes as a basis for further learning.

These ideas have emerged in several ways that were dispersed over time and place. For example, continuous quality improvement accentuated continual learning and involvement of people performing the work. Social science research methods were developed with the specific intention of understanding the nature of individuals' perceptions of problems and their cultural determinants.

Many SSM ideas are explicitly or intuitively incorporated into successful problem-solving exercises. The Journal titled *Systems Research and Behavioural Science* is devoted to reports about such exercises. The significant contribution of SSM is that it provides more structure – a richer, staged methodology – than is otherwise likely to be present. For example, when discussing evaluation of a health care activity, it may happen by chance that there is debate about players' differences in goals: that (say) clinicians view league tables showing relative performance among practitioners as no more than an attempt by non-clinicians to gain control and reduce medical autonomy, whereas other players believe league tables are an ethical way of informing consumers. SSM ensures that these kinds of differences in perceptions are identified, made explicit, and discussed. Moreover, SSM provides a process (including the language) that helps ensure the discussions are efficient and result in a way forward, and are based on deepening participants' understanding of the system of which they are part. These features – more structure, taking account of players' differences, a common language and systems understanding – are missing from the commonly observed approaches centred on power, economic, scientific and managerialist thinking.

What does the SSM+ solution look like?

SSM+ takes Checkland and his co-workers' ideas one step further, provides a staged approach from problem identification to problem resolution and then solution implementation, and applies them to specific kinds of problems we have argued exist in the health sector. The sixteen stages of SSM+ are summarised in Figure 3.

The figure outlines a structured, step-by-step approach that is designed specifically to handle the complexities, which is why there are sixteen stages. SSM+ provides a framework to bring together and involve a range of interested stakeholders in taking responsibility for a problem they share through a co-ordinated and transparent process.

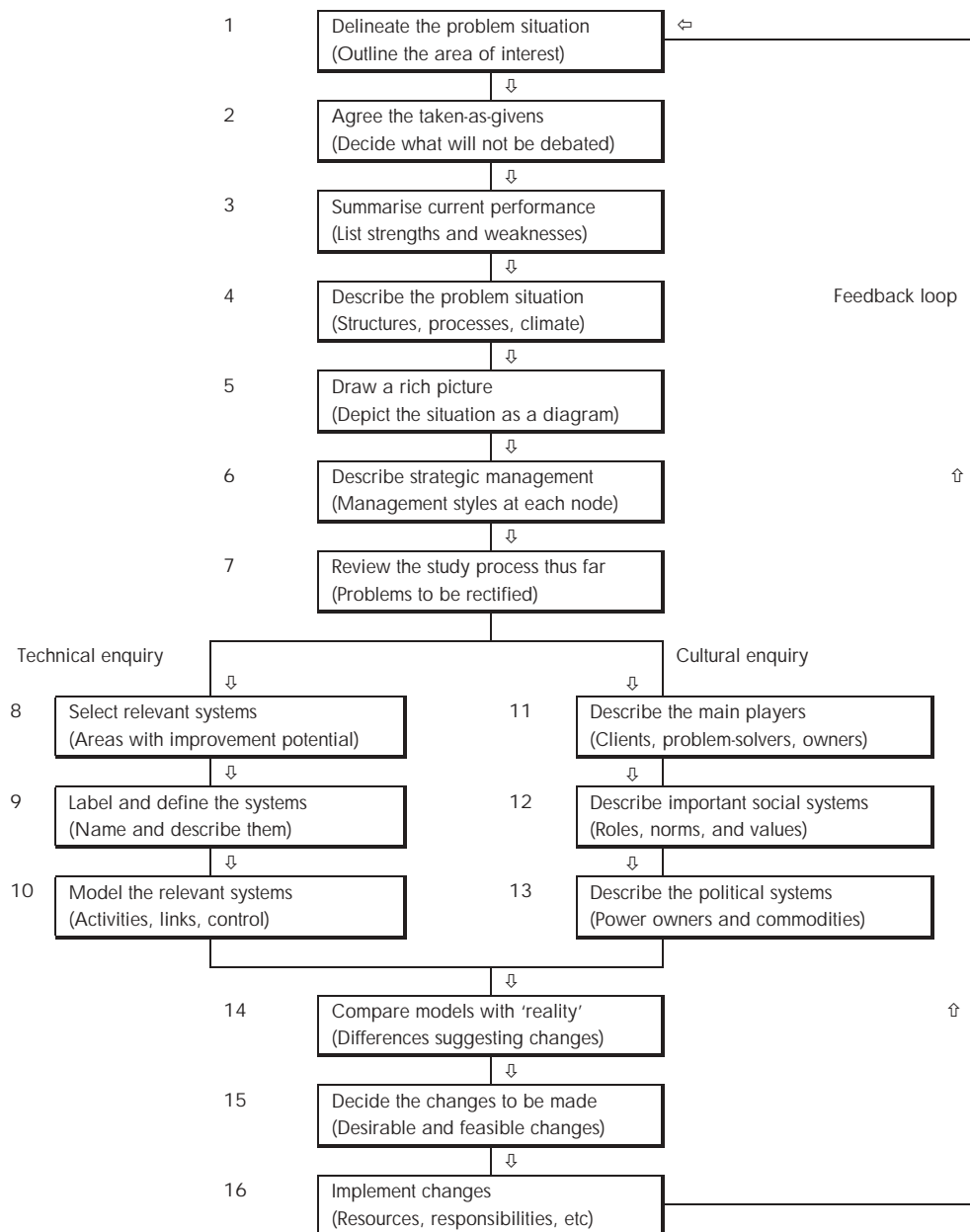
The analysis should concern problems as they exist in the real world (stages 1 to 3). In other words, it should be defined by stakeholders' experiences rather than some simplified abstraction such as those found in managerialist or health economics approaches. The aim is to explain complexities and allow space for conflicts (stages 4 and 5) and then identify ways to address them (stages 6 and 7), rather than to pretend they do not exist (or decide to ignore them because they are not easily addressed). Contrary to stand-alone scientific studies, the focus is not on problems but (in stages 4 and 7) on problem situations (that is, on the social and organisational circumstances in which problems exist and which may continually generate new problems and solutions).

As a point of departure from those who advocate political solutions based on self-interest, systems models should be used to frame and structure ethical debate (and use it as a learning process) rather than to posit a priori how 'the real world' should look in future. If the focus were the latter, too much would be taken as given, and important factors would not be recognised at all.

There are two types of enquiry: a technical and systematic enquiry (stages 8 to 10) and an enquiry about culture (stages 11 to 13). Problem solvers are generally quite good at thinking of technical fixes but not about how to resolve deep-seated cultural, social and political problems.

The process includes recognising and talking about differences of perceptions about the world (stage 14), with a view to managing them. This involves understanding and influencing the culture of the problem situations. The aim is to take action (stages 15 and 16), rather than merely to analyse and present good ideas (action research as mode of intervention is the goal here). An iterative process is used that involves continual learning through a feedback loop. Sustainability of resolution, and collaboration over solutions and implementation of them, are key goals.

Figure 3: the sixteen stages of SSM+



Objections and constraints, and responses to them

We would like to anticipate some objections to our discussion paper and this article. Some people may glance at the SSM+ process and think it is overly prescriptive. Others may say SSM+ has too many stages to be used by people who are short of time and other resources. Others may query whether people who are embedded within the very complex systems whose problems they seek to fix can resolve anything at all.

We argue that SSM+ is not prescriptive so much as a structured approach to resolving problems. Specifying sixteen stages in the design is meant to ensure that nothing is missed. Applying SSM+ for all but the most entrenched or complex problems should take between three and five half days of facilitated workshop time spread over a few weeks to provide a platform for major change to take place. This represents a low-cost investment in contrast to the continuation of deep-seated problems. By emphasising transparency, collaborative learning and conflict resolution, people can be encouraged to explore more deeply the systems issues they face, and their solutions.

SSM has been widely discussed in the academic literature. It has been used many times, and there are reviews suggesting it has a good success rate (Ledington and Donaldson 1997; Mingers and Taylor 1992). However, it has not been widely implemented and remains relatively unknown in health care. Indeed, we could find no reference to it in the Medical Journal of Australia, and only one report of its use has appeared in the Australian Health Review – coincidentally, in this issue (O'Meara & Strasser, 2002).

Reasons for its failure to be applied include the fact that thinking about hard problems is not easy to do, and requires a grasp of ideas that are inherently difficult. Some people simply find that changing complex systems and organisational culture is too hard.

A fundamental idea in SSM+ is that participants should be reflective. Few people are experienced in this, and most are uncomfortable with it. There is a stage in almost every application of SSM+ when a participant will be asked "Why do you see things that way, or feel that way?" and it is likely to cause some degree of discomfort.

It is much more comforting to believe that the problems are 'out there' rather than within ourselves. This is, of course, a good reason for wanting to adopt the 'hard' systems approach – the one that sees the world as ultimately resolvable into mechanistic subsystems and manipulable from a distance. This takes us back to the earlier putative solutions, those that we have argued have not worked to our satisfaction, and the satisfaction of others, in the past.

Another significant reason that SSM has not been adopted in health is that many of the players simply have no experience in soft systems ideas. They have been educated in and acculturated to a world in which almost all important research is reductionist. In this world there is little 'space' between facts and opinions, and therefore limited room for manoeuvre or change.

Also, SSM+ deliberately encourages the generation of perspectives that run counter to official policy or practice, and this can be very threatening to those who benefit from present arrangements. One consequence is that the level of commitment required to ensure success is not always easily obtained.

A corollary is that SSM+ is often viewed as being an unnecessary complication. What needs to be done is seen to be obvious by some players – as indeed it probably is, if one accepts their *Weltanschauungen* (or worldviews) without noting they are different from those of others (and therefore marginalises those) whose involvement is required.

One feature of complicated human-machine systems like health care is that people who share common perspectives (such as a group of doctors, or a group of nurses) are likely to be in regular communication within their own group. They will consequently be continually reinforcing each other in terms of both their *Weltanschauung* and technical aspects of the problem and its resolution. The problem as they see it is indeed easily resolved in some respects, but unfortunately their perspective may be limited or wrong (and hence their solution flawed).

Equally important, they are presenting a solution to a problem that other people do not recognise – at least, not in the same terms. For example, the problem of high copayments for people with private health insurance can be 'solved' in many ways, but for some people the problem is the existence of private health insurance itself. When private health insurers talk about problem situations in their field of work, they take as given a wide range of matters that others reject out of hand. In this sense SSM+ does not avoid raising and confronting fundamental questions. Rather, it actively encourages the creation of an environment in which they are bound to be raised and discussed in constructive ways.

Where do we go from here?

The health sector may not literally be in a mental straitjacket, but it certainly seems like it is to many observers of and participants in it. Past solutions, advanced for many good reasons, have not evinced the successes that are needed. Despite this, they have endured and are widely used. At bottom, this may be because no-one has

been able to see (and then to find others who see) any other way. It is time to try a different approach. Without one, little headway is possible.

The alternative is to continue on the existing rail tracks. This is not tenable in our view. More of the same, striving to make the same train go faster and faster, to the same old destination, seems to offer a poor prognosis. Stakeholders in the system need a set of tools to change it culturally, technically and behaviourally. SSM+ provides this. We hope it can fulfil its promise and be made to work.

Footnote: further information

A copy of the discussion paper *Soft systems methodology plus (SSM+): a guide for Australian health professionals* can be purchased from the Centre for Clinical Governance Research at the University of New South Wales (Level 2, Samuels Building, Sydney NSW 2052, telephone 9385 3861, fax 9663 4926, email clingov@unsw.edu.au).

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