THE APPLICATION OF SOFT SYSTEMS METHODOLOGIES TO UNDERSTANDING AND RESOLVING CONFLICTS

M.A. Hersh

Department of Electronics and Electrical Engineering,
University of Glasgow, Glasgow G12 8LT, Scotland.
Tel: +44 141 330 4906. Fax: +44 141 330 6004. Email: m.hersh@elec.gla.ac.uk

Abstract: This paper discusses the application of soft systems methodologies to the analysis of conflicts with a view to increasing understanding and making suggestions for their resolution. The paper presents a particular soft systems methodology in seven stages and discusses in detail the application of this methodology to conflict analysis. *Copyright © 2002 IFAC.*

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1. INTRODUCTION

Systems approaches have been gaining in popularity in a number of different fields, including social, economic, information and engineering. A system can be defined as an assemblage or combination of elements or parts (including methods, procedures or doctrines) that forms a complex or unitary whole, such as a transportation system or system of organisation and management. It consists of components or operating parts, attributes or properties of the components and relationships between the components and attributes. It is the relationship between the parts rather than the parts themselves that determines the behaviour of different systems. This allows the same principles to be applied to many different systems. The main advantages of systems approaches are the provision of tools to structure complex situations so as to facilitate consideration of the full range of complex interacting factors and interests, thereby allowing tradeoffs to be made between them.

Systems approaches can be classified in a number of different ways and one important distinction is between hard or engineering (Blanchard et al, 1990; Chestnut, 1967; Klir, 1972; Sage, 1992) and soft

systems approaches (Checkland, 1996; Checkland et al, 1999; NHS, 1996). One of the main differences is the precise statement of system objectives at the earliest stage of problem formulation in hard systems methods, whereas they are allowed to evolve as understanding of the problem develops in soft systems methods. Soft systems approaches are generally more qualitative and descriptive, whereas hard or engineering approaches are more quantitative and mathematically based. However both approaches can often give useful insight into problem situations and contribute to their resolution. The choice of appropriate methods will depend largely on the nature of the problem. In this paper a soft systems methodology is applied to increase understanding of conflict situations and contribute to their resolution. The paper is laid out as follows: A soft systems methodology is discussed in section 2 and applied to the analysis of conflict in section 3. Conclusions are presented in section 4.

2 SOFT SYSTEMS METHODOLOGY

In this paper the soft systems methodology due to Checkland (1996) will be applied to understanding and proposing tentative solutions to international and

national conflicts. This approach has a seven stage methodology, which can be listed as follows:

1. Starting with the unstructured problem situation
2. Obtaining an expression of the problem situation
3. Obtaining the root definition of the relevant systems
4. Obtaining conceptual models drawing on the formal system concept and other systems thinking
5. Comparison of the model of stage 4 with the problem situation of stage 2
6. Implementation of feasible, desirable changes
7. Taking action to improve the problem situation

However it should be noted that it is not necessary to start with stage 1 and backtracking and iteration are often essential. In an actual study it is likely that several stages will be proceeding concurrently at different levels of detail, as the methodology is itself a system and therefore any change in one stage will affect all the others. Stages 1, 2, 5, 6, and 7 are real world activities which involve the problem situation, whereas stages 3 and 4 are systems thinking activities which may or may not involve the problem. Stages 1 and 2 involve building up the richest possible picture of the situation in which there is perceived to be a problem, rather than the problem itself, and without imposing a particular structure. This enables selection of one or more viewpoints from which to further study the situation and allows a range of possible and hopefully relevant choices to be revealed. In constructing a neutral picture the concepts of structure and process and the relationship between structure and process may be useful. Structure often involves physical layouts, power hierarchies, reporting structures and formal and informal communication structures. Process can often be investigated in terms of activities such as deciding to do something, doing it, monitoring how well it is done and any external effects and taking appropriate corrective action. A difficult relationship between structure and process is frequently a core characteristic of situations perceived to have problems. The first two stages of the methodology may produce a number of notional systems which seem relevant to a particular representation of the problem rather than the real problem itself.

Stage 3 involves determining a number of systems which are likely to be relevant to the putative problem and preparing concise definitions, referred to as root definitions, which are intended to encapsulate the fundamental nature of the systems chosen. The aim is to obtain a carefully phrased explicit statement for each subsystem which can be used to help improve the problem situation. The choice of root definition can be changed if it does not lead to useful models and suggestions at later stages. It can also be tested by briefly investigating what types of model and changes it is likely to lead to. In a study of the role of a community centre serving a deprived area in a city in northern England and largely fund by a local industrialist, the following root definition was used: An institution encouraging and helping community action aimed at development of the community's own resources (Checkland et al, 1999). This example illustrates the fact that root definitions are often based in a particular way of perceiving the world or Weltanschauung, in this case to develop self help by the community. There are clearly a number of different approaches to obtaining a root definition. One approach contains the following elements, giving the mnemonic CATWOE:

- A transformation process (T) which transforms defined inputs into defined outputs.
- Ownership (O) of the system i.e. some agency has prime concern for the system and the ultimate power to abolish it .
- Actors (A) or agents who carry out or cause the main activities of the system, particularly the main transformation, to be carried out.
- Customers (C) of the system i.e. people affected by the system's activities.
- Environmental constraints (E) on the system's activities i.e. features which are taken as given.
- A Weltanschauung (W) i.e. an outlook or framework which defines the context of the root definition.

Stage 4 involves making conceptual models, consisting of a structured set of verbs, which define the minimum necessary activities required by the human activity systems named and defined in the root definitions. A root definition can be considered as a description of a set of purposeful human activities in terms of a transformation process. Therefore stage 4 models the activity system required to achieve this transformation. It should be noted that this model is a structured set of activities required to implement the root definition and not a description of any actual human activity system. As far as possible the tendency to describe actual activity systems existing in the real world should be resisted, as this negates the point of the approach, which is to generate new and radical ideas. Conceptual model building can most easily be begun by writing down about six verbs which cover the main activities implied by the root definition. Thus the model is first made at low resolution level i.e. little detail and then each major activity is expanded at a higher level of resolution. Unlike models which represent the real world, the conceptual model cannot be validated, for instance by showing that it simulates observed real world behaviour, as it represents concepts rather than a particular real system or situation.

However conceptual models should still be checked to ensure that they are not fundamentally deficient by testing that the system has appropriate properties (Checkland, 1996). Another useful approach is to consider the model in terms of other types of system theories, for instance by restructuring it in terms of

system dynamics, adaptive control theory, Vickers' (1965, 1973) concept of an 'appreciative system', Beer's (1972) five sub-systems or the Tavistock socio-technical system (Emery et al, 1960).

In stage 5 the conceptual models from stage 4 are compared with perceptions of the real world situation. This will often involve a debate with appropriate stakeholders in the problem situation. This debate should lead to the definition of possible changes in stage 6 which are both desirable and feasible in terms of prevailing attitudes and power structures and the history of the situation. However a number of iterations will generally be required. There are three main types of possible changes: changes in structure, changes in procedures and changes in 'attitudes'. Structural changes refer to changes in parts of the system which generally do not change in the short term, whereas procedural changes are changes in dynamic elements. Compared to changes in attitude, these types of changes are relatively easy to specify and implement, even in the short term. Changes in attitude can be considered to include changes in influence and the expectations of what is appropriate behaviour in different roles, as well as changes in readiness to rate certain types of behaviour 'good' or 'bad' relative to others. Attitudes are particularly difficult to change and, when changes do occur, they may not be the desired ones or even in the desired direction. The discussion should involve concerned actors and stakeholders in the problem situation and should aim to identify changes which are desirable as a result of the insight gained from the root definitions and conceptual models and culturally feasible in terms of the characteristics of the situation, the people in it, their shared experiences and their attitudes. It may not be easy to find changes which meet all these criteria.

3. APPLICATION OF THE METHODOLOGY TO THE ANALYSIS OF CONFLICT

3.1 Part 1: Stages 1 – 4

Stage 1 involves stepping into or otherwise drawing up a description of the unstructured problem situation. In many conflicts the unstructured problem situation can only be described in not very scientific terms as a mess. In many cases the actual facts of the situation are controversial with the two (or more) sides having their own versions of the historical facts and their own understandings of the situation that has led up to the conflict. Even when the facts are not disputed, they may lead to different interpretations and conclusions. Issues of ambiguity and confusion have been discussed extensively in the literature, but can only be very briefly mentioned here. In particular conflict situations occur at boundaries, between individuals, organisations and nations. Role ambiguity due to a lack of or inadequacy of information and role conflict, due for instance to

power issues and misunderstandings are particularly frequent at system boundaries (Kahn, 1964).

Different parties to a conflict may have sets of values which are incommensurable i.e. cannot be ranked. This may lead to irreconcilable conflict between different value systems. Although not universally supported, meaning variance is sometimes cited as one of the causes of incommensurability in the philosophy of science. (Lukes, 1991). It has been suggested that incommensurability occurs when it is not possible for two different types of language or concepts to make sense together (Feyerabend, 1978). Although generally used in other fields such as the philosophy of science, this is clearly of great relevance to conflict analysis.

Mental models are small-scale internal models with a direct relationship to the external counterpart. They are functional rather than physical entities, recursive and not necessarily complete or accurate (Johnson-Laird, 1983). They can be used to give mental representations of a situation or problem, though they are more frequently used to give a mental representation of a text of discourse (Garnham, 1985). Mental models are often the basis of sensemaking (Weick, 1995) to enable individuals and groups to structure and explain their experiences. New experiences are generally interpreted in terms of existing mental models and may be edited by selection and filtering to fit them better to existing mental models rather than changing the models to fit new data (O'Connor et al, 1997). Limiting mental models often inhibit change and/or create difficulties based on perceptions rather than real difficulties in the system.

In many cases there will be specific issues of dispute, but these may not be the most important aspect of the conflict. It may be the distrust, suspicion, misunderstandings, fear and hatred between the two sides, which have built up over an extended period, that are the important factors in the conflict and make it difficult to resolve. In some cases the issues of contention may only serve as a pretext for a conflict resulting from this climate of suspicion and fear. There may also be groups, such as arms traders or politicians who are using it to increase their political power, with a vested interest in continuing the conflict.

Although most ordinary people generally prefer peace and stability, when a conflict has continued for a long time, people may become accustomed to the state of conflict and almost pschologically unready for peace. The conflict may have resulted in small or large scale hostilities, up to and including outright war with considerable loss or life, serious injury and damage to infrastructure or there may be occasional or more frequent acts of terror. In other cases conflict leads to breaking of diplomatic and other contacts and/or economic sanctions, which can also

result in considerable loss of life. At the same time as the ongoing conflict, people will also be trying to continue with their ordinary lives, which will be disrupted to different extents according to the nature of the conflict.

The next stage involves obtaining an expression or clearer description of the problem situation, without imposing a particular structure which may restrict understanding at later stages. It may of course not be the apparent conflict which is the real problem to be resolved. Obtaining a clearer description will generally involve identification of significant factors, important processes and power relationships. It will also generally involve posing questions about the main parties to the conflict, outside parties intervening in the conflict, other vested interests, the nature of the conflict and other activities occurring at the same time. Questions about the main parties to the conflict should include the power relations between them and between them and outside parties, particularly those intervening in the conflict, structure and decision making mechanisms, pressures on them, barriers to making changes, such as resolving the conflict, and any vested interests of their leaders in continuing the conflict. Questions about outside parties should include their motivations for intervention and any vested interests. Questions about the nature of the conflict should include whether it is covert or overt, the extent of hostilities, its history as far as this can be determined, the issues involved and whether they are substantive or largely a pretext, and the importance of mistrust and fear and other negative emotional factors in maintaining the conflict.

Stage three involves identification of a number of systems which are likely to be relevant to the putative problem and obtaining concise root definitions which encapsulate the fundamental nature of these systems. In the case of conflict analysis useful subsystems can generally be obtained by identification of the main actors and then defining a first level subsystem for each of these actors. Such actors will include the main parties to the conflict, outside parties intervening in the conflict and other parties such as arms traders. In addition to relations within subsystems, relations between the different subsystems are important and may require separate subsystems for their representation. If arms traders are involved, often selling weapons to both sides, the associated system could be defined as: an organisation for making as much money as possible through the sale of weapons, in total disregard of ethical issues, including the likely prolongation of the conflict and increases in loss of life.

If outside parties, such as the US, are involved, the associated system could be defined as: an organisation for maintaining and enhancing its own interests in the region, including maintaining friendly regimes in power and security and stability of oil supplies, while enhancing its prestige and presenting itself as a defender of the free world and human rights. It should be noted that these definitions are influenced by the political views of the author and that, in this type of situation, it is very difficult and possibly not desirable to derive root definitions which are independent of such political viewpoints or bias. The systems based on the parties to the conflict can be defined variously as, for instance: a small country trying to survive incursions by larger neighbours and maintain its culture and traditions; a nation which has been misled by the ambitions of leaders or the hates, fears and prejudices of a small minority into making war; a group of people who find themselves in a situation they do not understand or like without any knowledge of how they have got there; a nation with a fortress mentality resulting from a belief in the need to be strong in order to avoid annihilation, combined with the certainty that the other side cannot be trusted and will try to knife them in the back or drive them into the sea. Another important subsystem can be defined as follows: people trying to continue with their ordinary lives with minimal disruption, in many cases while also contributing to national aims in terms of supporting one side of the conflict, particularly in war situations.

Stage 4 involves making conceptual models, consisting of a structured set of verbs, to define the minimum necessary activities for the systems defined in the root definition. These conceptual models should try to avoid describing actual activity systems in the real world. Conceptual models should be derived for the following activity systems which have already been defined: arms trader, outside party and some of the different types of parties to the conflict. First low resolution models are made, consisting of about six verbs, which describe the main system activities. Appropriate verbs for the arms trader model are: making money, selling arms, ignoring ethics. This model can then be further developed by expanding the description of each of these activities. For instance the ignoring ethics subsystem can be expanded to include: providing the means to prolong the conflict, increasing loss of life, injury and environmental destruction and supporting both sides independently of their moral justification or behaviour. More detailed descriptions can then be built up for each of these subsystems until an appropriately detailed model is obtained.

Appropriate verbs for the outside party model are: exerting power, preserving self interest; maintaining friendly regimes in power; maintaining oil supplies; enhancing prestige; spreading positive propoganda. Appropriate verbs for the descriptions of some of the parties to the conflict include the following clusters: Surviving incursions, maintaining culture and traditions; following leaders, following minority prejudices and making war; feeling confusion, feeling overwhelmed by the situation and not knowing how to exit from the situation; having a

fortress mentality, feeling fear of annihilation, not trusting the other side and fearing the other side's evil intentions. More detailed descriptions of these and any further subsytems can be derived, until the model has been described in sufficient detail.

3.2 Part 2: Stages 5 – 7

Stage 5 involves comparison of the conceptual models obtained in stage 4 with perceptions of the real world situation. In many situations, this will involve a debate with the appropriate stakeholders. However one of the problems in conflict situations is frequently the inability to bring the different parties together in constructive discussion. Perceptions of the real world situation are often polarised into 'goodies' and 'baddies', for instance the virtuous nation defending a just cause and the aggressor without provocation who is committing unbelievable atrocities. They are consequently very subjective and likely to differ according to the observer. There may also be a certain amount of symmetry in the perceptions of the different parties to the conflict in terms of their views of each other and their mutually inverted views of the causes of the conflict. In some cases the limited choices resulting from this polarisation can be expanded by generating new options and by consideration of what each side is right about (Weston, 1997). The frequent devaluation of subjective relative to objective perceptions is misplaced and they can be considered as different points of view from inside and outside the (problem) situation (Checkland et al, 1999). However soft systems and associated approaches can be used to obtain distancing and different perspectives, which are helpful in trying to move forward in understanding and resolving the conflict.

There are generally significant differences between the subsystem models for the parties to the conflict and for outside parties and their perceptions of the real world situation. For instance in the model, outside parties have vested interests and manipulate the situation to maintain their own interests and power, often regardless of the costs to the actual parties to the conflict, whereas real world perceptions are closer to the propaganda of disinterestedly acting to protect the free world and human rights. Differences between the arms trader system model and real world perceptions are not so great. The main difference is probably in value systems, with the model explicitly focusing on the lack of ethics of the arms trader. Differences between the model and real world perceptions of the main parties to the conflict relate to their understanding of the situation and the nature of and causes of the conflict. There may also be injustices and genuine grievances on all sides. At the same time one side may have considerably more power than the other(s) and have abused this power. However the subsystems of groups or parties to the conflict which are confused

and/or overwhelmed, while trying to continue with their ordinary lives, are generally close to real world perceptions.

Stage six involves the implementation of desirable and feasible changes. However it is generally much easier to identify desirable changes than to determine how they could be implemented in practice. This raises the issue of identifying leverage points (Checkland et al, 1999) at which changes can most easily be made and how such leverage points can be used to make changes in desirable directions. Some changes may only be feasible in the long, but not the short term. Particularly in complex situations, such as conflict, change is an incremental process which occurs over time. Therefore a dynamic version of the soft systems methodology will probably be required, which allows changes to be made and the methodology reapplied until a reasonable understanding of the conflict situation and possibly even an acceptable resolution is obtained.

In most cases it would be desirable to change the arms trader subsystem to be more aware of ethics and the effects of selling arms on prolonging and intensifying the conflict. Feasibility is another question. Even when arms embargoes have been imposed, they have often been ignored. Similar problems exist with regards to changing the behaviour of outside parties. It would be desirable to change their motivation for intervention to the disinterested concern for peace and human rights that they profess. The feasibility of doing this is questionnable, since such outside parties are often very powerful compared to the parties to the conflict and may also ignore international law and international organisations, such as the United Nations. However such parties are often open to pressure from public opinion and it may be possible to strengthen international organisations, while reducing the influence of the most powerful nations on them.

Other desirable and possibly feasible change require the real issues and the nature of the conflict to be brought into the open. Although this is feasible, there are generally considerable barriers to doing this in terms of opposition from different groups, both parties to the conflict and outside parties, with their own agendas. 'Winning' may be considered more important than resolving the conflict in a way that is reasonably acceptable to all sides, though this will generally require compromises. An associated and probably even more difficult change to achieve is in the perceptions of the main parties. This includes their perceptions of the conflict situation and their role in it and relationship to each other.

Stage seven involves taking action to improve the problem situation. Such action will generally involve (trying to) implement the changes identified in stage six. Actions which could affect the arms trader,

outside parties and parties to the conflict will be considered. The arms trader subsystem is considerably more likely to be affected by compulsion than persuasion. Therefore appropriate measures should include arms embargoes which are strongly enforced with very stiff penalties for transgressions, as well as either setting up well-founded and powerful official bodies to observe the arms trade or supporting and acting on reports from independent campaigning groups. Measures which could influence outside parties include strengthening international courts and other international organisations and the strong enforcement of international laws with stiff penalties for non-compliance. They also include a range of measures to apply pressure from concerned citizens and campaigning and pressure groups. Other measures could include educational activities to change the attitudes of ordinary citizens to support disinterested involvement, including (where appropriate) economic aid without 'strings' i.e. restrictive conditions on the recipient or benefits to the donor.

Measures that could have a positive effect on the parties to the conflict and the relations between them will depend on the specific situation. In many cases, even when immediate hostilities or other overt expressions of conflict can be brought to an end in the short to medium term, measures will be required over an extended time period to end or significantly effect the various factors that are the underlying causes of the conflict. When, as in many cases, lack of or limited access to resources and poverty are important issues, economic aid without strings can be effective. Such aid should generally be applied to local, relatively small scale grass roots projects, particularly those managed by and involving women, in order to be effective. Such aid should in general not be given directly to governments, who may use it for large scale prestige projects which have no significant local impacts. Other measures include a range of activities to build up trust and understanding between the different communities. Such measures may seem relatively small scale compared to the enormity of the conflict, but can be very effective over time. They can involve bringing small numbers of individuals from the different parties or communities together in a safe, well supervised and well structured environment and education and information about the culture, language and history of the other parties to the conflict. Another possibility is applying the skills, creativity and financial and other resources presently directed to developing new weapons, particularly of mass destruction, to the resolution of conflict and peaceful coexistence of diverse groups of people.

4. CONCLUSIONS

This paper has discussed soft systems methodologies and demonstrated how a particular soft systems methodology can be applied to understanding and trying to resolve conflict. Further work is required to develop a dynamic iterative version of the methodology. The role of the methodology in increasing understanding, as well as suggesting possible approaches to resolution of conflicts has been clearly demonstrated. However, where soft systems methodologies have been applied successfully to resolving real problems, this has generally involved some degree of participation or at least good will from some at least of the main stakeholders in the problem situation (Checkland et al, 1999). This is clearly a problem in conflict resolution. Thus, since the methodology is intended to be of more than theoretical interest, further work will be required to investigate how desirable changes can be implemented in practice.

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