INTEGRATION SYSTEM: A PROBLEM-SOLVING FRAMEWORK FOR SEEKING
STABILITY IN COMPLEX CONFLICTUAL SITUATIONS

A Thesis submitted for the degree of Doctor of Philosophy

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ABSTRACT

The thesis examines some of the methodologies used for conflict study and analysis; it reviews Operational Research based approaches and methodologies from other areas of study that have been, and are still being used for the study and analysis of conflict situations in complex systems. The thesis argues against the prevalent use of single methodologies for such systems, and calls for the adoption of approaches that allows the use of multiple methodologies, which would place the emphasis on the "problem" rather than on any particular approach or methodology.

The nature, causes and effects, ecology of conflict, and the concept of issue relevance and irrelevance are examined as well as the role of perceptions. The factors determining the development, level and scope of conflicts are reviewed with the aim of ascertaining their importance to conflict outcomes and when meaningful intervention could be made during conflict situations. Various outcomes of conflict, primarily management, dissolution, and resolution are discussed and their relative strengths and weaknesses as strategies for handling conflicts.

Case studies are used to examine and support arguments about how different conflict outcomes arise and some proposals are made for the study of alternative futures. It is argued that undesired conflicts could be reduced or prevented in complex interaction systems through the deliberate design and incorporation, into such systems, of structures and mechanisms that will serve as integration systems. These integration systems involve all the parties in an interaction system and are intended to reconcile views, clarify positions, inform the parties about each other and assist in the formulation of joint responses to negative internal and external stimuli.

An outline structure of an integration system is given and how it could be developed in a system. Many methodologies and approaches are based on the premise of a "prima facie" existence of a conflict; a tool is suggested in the thesis that will assist analysts, observers, or any interested party to monitor the relationship in an interaction system. This tool concerns what I have called the Y-points and Y-diagrams. The Y-concepts are based on the notion that there are periods in an interaction when a decision can be consciously taken to escalate or de-escalate a situation.

The approach advocated in the thesis is based on two assumptions: the first is that the parties prefer a "normal" relationship to a conflictual one, the second is that the parties in a conflict would prefer the resolution of a conflict and its attendant stability to an unending management of the situation. Consequently, the main thrust of the arguments in the thesis is on conflict resolution and the design of stability into complex interaction systems.

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CHAPTER 1

General Introduction

Conflict is a feature of all dynamically interacting systems, particularly of social systems with their multiple objectives, goals and dimensions; conflict situations thus become multidimensional and multiattribute. The permeating and pervasive effect of conflict on all interacting systems (physical, natural and conceptual) has meant that it has been and is being studied by researchers from several disciplines concerned with interacting systems, in the Arts as well as the Sciences, from philosophy to the physical sciences, from Aviation to Zoology.

I have used an Operational Research (OR) approach for this research because it allows the use of multidisciplinary methodologies and analytical tools suitable for individual situations without the constraints of particular disciplinary purity as long as there are available methodologies for the problem; and my conviction is that conflicts in social systems are relativistic rather than isomorphic or homomorphic, as many of the available approaches appear to suggest. Consequently conflict is more appropriate to be studied and analysed on the basis of the situation rather than on the basis of available "solutions" or particular methodologies.

This adoption of a relativistic idea of conflict is based on my acceptance of the ideas of Ackoff[1974], Beer[1962], Bowen[1983], De Reuck[1984], Emery,Trist[1965], Galtung[1965] and Spink[1977] who, using different approaches and in different contextual
settings, demonstrated the interconnections and interdependence of multiple causes with multiple effects in conflict situations.

The research has entailed a detailed literature review of available methodologies in OR, and a review of Political Science literature. It has also involved interviewing several organisations which have been or are still involved with resolving conflicts in complex systems and seeking the common factors in successful resolutions.

In the course of the research, a structure was evolved which could assist organisations in maintaining their stability by preventing malevolent conflicts or, should one develop inadvertently, minimising its negative effect. Following this general introduction, the argument is in five parts and each part or chapter has its own detailed introduction.

Chapter 2 examines the nature of conflict by reviewing various interpretations of conflict from different viewpoints, commenting on the limitations of these views as well as coming up with a working definition of conflict regardless of its contextual setting. This chapter also looks at differences between hard and soft systems and the causes and effect of conflict, tracing conflict's development over time and its relationship with the concept of conflict space.

Chapter 3 reviews some of the available methodologies, such as Game theoretic-based approaches (metagames and hyper-games), Cybernetics, Soft Systems Methodology (SSM), Problem Formulation, Causal Texture, Problem Solving Methodology and Robustness Analysis. In classifying them into Preventive, Managing and Resolving approaches, an argument for their joint use, rather
than the individual uses that are common at present, is developed and defended.

In this Chapter, an examination of the process of perception formulation, before, during and after an overt conflict situation, is attempted. The concepts of legitimacy, ownership and relevancy, especially within the notion of intra- and inter-system conflicts are expounded.

Chapter 4 deals with some real-life systems with inherent potential conflicts, and reviews how situations have been and are still being resolved and managed. Some common factors were elicited from these situations and used in addition to other deductions to evolve some concepts and finally a structure for studying systems and designing stability as an integral part of an interaction system.

Chapter 5 explains in detail the proposed structure which is the main contribution of this research to the field. Chapter 6 includes the general conclusions of the research and is followed by the list of references.

Schelling[1980], classified conflict research into two broad schools of thought with one school aiming to treat conflict as "...a pathological state and seek its causes and treatment", while the other school would treat conflict as given i.e "...take conflict for granted and study the behaviour associated with it". My research has attempted to reflect the views of both schools of thought in that conflict is treated as a consequence of system interaction and as a phase in an interaction relationship that could be designed and built into a system consciously or otherwise. I believe that, like other aspects of interaction,
its development could also be monitored and actions taken to promote it (if it is considered and judged to be in the system's interest to do so), or minimise its negative effects (if this is considered to be in the interest of the system). In the thesis therefore, I have attempted to examine conflict as one of a possible number of states in a system.

This chapter examines the various definitions of conflict from different conceptual points of view. It then assesses some of the explanations given for the development of conflict and some of the diverse approaches to the development of models for conflict situations. It examines the usefulness or otherwise of these approaches to the modelling of conflict situations in complex human activity systems, and advocates the adoption of approaches which are based on the ecology concept where situations are holistically studied, and issues are examined both individually and jointly in order to determine the effect of each issue on the other issues. Decisions could thus be made with qualitatively and quantitatively adequate information.

As concepts used in the chapter like synchronism, change, stability etc are briefly explained on page 57, and interests page 60-60.

2.1 Definitions and implications of conflict

Conflict is a concept of process that pertains to human activity systems at all levels of recursion and that has been studied, analysed, and evaluated upon by psychologists, political scientists, and social scientists with the emphasis that it is to be universally applicable.
CHAPTER 2

NATURE OF CONFLICT

Introduction

This chapter examines the various definitions of conflict from different conceptual points of view; it also looks at the explanations given for the development of conflict and some of the diverse approaches to the development of models for conflict situations. It examines the usefulness or otherwise of these approaches to the modelling of conflict situations in complex human activity systems, and advocates the adoption of approaches which are based on the ecology concept where situations are holistically studied, and issues are examined both individually and jointly in order to determine the effects of each issue on the other issues. Decisions could thus be made with qualitatively and quantitatively superior information. Some of the concepts used in the thesis like Cybernetics, Ecology, Stability etc are briefly explained on page 17, and later on pages 204-205.

2.1 Definitions and Explanations of Conflict

Conflict is a concept or process that permeates all interacting systems at all levels of recursion and thus has been studied, analysed and commented upon by people from diverse disciplines, with the consequence that there is no universally acceptable
definition of conflict. However, there are certain conditions, parameters and behaviours which, if present in an interacting system, seem to qualify the system to be described as "being in a state of conflict".

This problem of defining or explaining conflict situations is encountered not only by the people studying human activity systems but, to various degrees, by those studying physical, mechanical and electronic systems or combinations of systems. Some of the factors that are responsible for this problem are the following.

(a) Conflict is a continuous process/state rather than a discrete state.

(b) It could be multidimensional (i.e., occupy several spaces simultaneously).

(c) It could be a psychological or physiological state.

(c) It could be sociological or mechanical; and

(d) It could also be within a system or between systems.

These factors and others ensure therefore that when the study of conflict is carried out in diverse disciplines, the different disciplines produce different definitions and explanations for causes of conflict in their respective languages, with the inherent bias that will be attendant in such an approach. In aviation studies for example, Whitfield and Bird (1977), explain conflict as "the loss of legal separation between two or more aircraft" while Mack and Snyder (1957), in political...
context, attribute conflict development to "position scarcity" and "resource scarcity" in an organised society with an organised structure of rewards. Marcuse[1955], Calhoun[1962], Milgram[1963], Storr[1968], and many other psychologists trace conflict to "death instinct in man", "frustration", "obedience to authority", "crowding", "stress", and so on. Lorenz[1966], in biology, asserts that conflict could be explained as due to "territoriality instinct", which is essential for the survival of the species. Marx[1964], von der Mehden[1964], in politics and political economy, regard conflict as a consequence of the "class structure within the society" as well as the "uneven distribution of wealth and power".

These statements, although simplified interpretations of elaborate theories, portray the extent of the diversity of views on conflict, as perceived by separate disciplines. While acknowledging the contextual validity of these definitions, I nevertheless submit that these views are too narrow for empirical applications.

Galtung[1965], defined conflict as a situation in which "...an action system... has two or more incompatible states", while Harris[1974], defines it as occurring "... when two or more systems are perceived as pursuing aims, policies or activities, some of which are mutually incompatible". These two definitions are more applicable to systems than the earlier ones, but for my studies were still inadequate; in the case of the former, it is incomplete, as conflict could occur with only one incompatible state, depending on its interpreted relevance, and for the latter definition, a conflict situation could arise because of means rather than because of goals.
My working definition of conflict is that there could be said to be conflict within a system when the perceived actions, espoused views, declared or perceived objectives of definable parts of the system are identifiable, or capable of being interpreted by observers, as deviant from those of previous or expected normal relative situations. In such a case, aspects of interaction become mutually incompatible and converge outside the normal interaction space.

Some common features of all interacting systems are pointers to the nature of conflict situations; in addition to the earlier listed ones, they include the following.

Although continuous rather than discrete, there are discrete seminal points during the course of conflict which mark important phases or transitions.

There is a need for some common purpose or objective in the system before a conflict situation could develop, because as Galtung[1965] argued, "an aggregate of "n" systems is not an action system unless and until there is a certain unity of ends and means" (his action systems are human activity systems).

Conflicts, like most interacting processes, are time and space bounded. They are legacies of past actions, inactions, policies, principles, ambiguously settled issues, unaccepted decisions and unclarified assumptions. In such situations, boundary demarcation of systems is difficult.
These features determine, to a significant degree the nature of the systems, and lead to the type of conflicts likely to be experienced by them.

**Some definitions of key words**

**Cybernetics** is used here to mean the method of control that is based on the feedback principle with causal relationships, i.e. goal-seeking and self-controlling behaviour.

**Game-theory** is used to refer to the application of rational thought in interaction between 2 or more actors or players, rationality itself indicating the striving for maximum gain or minimum loss.

**Decision theory** is used to mean the analysis of rational choices within organisations, based on the examination of given situation and its possible outcomes.

**Stability** is used in the thesis in the sense of the Cybernetic meaning of the word, i.e a system is said to be stable if it maintains its equilibrium despite internal or external disturbances (or, in case of any loss, the return to equilibrium).

**Stability** in the game-theoretic sense refers to the intentions of actors/players, i.e a scenario is said to be stable if each of the parties (all the actors/players) expects it to happen.

**Ecology** as used in the thesis is defined on page 49 and is broadly similar in outline to the biological concept where it is used to describe the total environment affecting a species or particular situation.

**Conflict space** is used to describe the area of interaction over which conflict exists. Thus it is a sub-set of the total interaction area.

**Interaction space** is used to describe the total area of interaction between parties and covers all aspects of relationship between the parties, whether 'normal', competitive or conflictual.
2.2 Conflict in Hard and Soft Systems

Conflict research is an area where the dichotomy between hard and soft systems is rather pronounced, not only in their constitution, but also in the approach to adopt in the study, analysis, management or resolution of any conflict experienced by them. Complexity and complicatedness are two terms that could help clarify the distinction between hard and soft systems. Casti[1984], defined complexity as "the number of non-equivalent ways that O can see S...the number of alternate, possible counter intuitive modes of interaction that S can have with O.". The labels "O" and "S" in this instance are used to denote complex interacting systems with autonomy which are capable of theoretically infinite probable numbers of relationship. Complicated systems on the other hand have finite states which, although similar to complex systems, are nevertheless capable of being precisely modelled and represented.

At one level of interacting systems on a hierarchical scale are "hard" systems which, by definition, will include mostly human-designed technical systems which are mechanical and deterministic in nature by design. These systems have no capability for conflict, although there is always the probability of breakdowns due to incompatibilities of state.

The incompatible states that are likely to develop within these systems are predictable and technically resolvable provided that
there exists a true and representative codification of the system's structural and internal design; these "problem" states could even be pre-empted and back-ups provided to prevent a total breakdown of the system; thereby ensuring a certain level of overall system effectiveness. These types of system could therefore be justifiably referred to as "complicated" rather than "complex" like the systems earlier defined by Casti [op cit].

Simple mechanical systems of this type could have a corresponding one-to-one relationship between cause and effect in their problem states as shown in Fig.2.1(a).
Fig. 2.1(a) Causal relationship in a simple mechanical way. (Cause could be within the system.)

Fig. 2.1(b) Causal relationship in a complicated mechanical or 'simple' socio-technical system.
On a higher level in the hierarchy of interacting systems, and characterised by a high degree of interaction and interdependence in the functional relationship between human beings and the electro-mechanical components of the system, are socio-technical systems, in which, the introduction of human components has increased the number of possible relationships. Complexity (rather than complication) and conflict are thus introduced into the system through the human sub-system.

Any incompatibility of states or conflict between these components might lead to a breakdown or failure of the system. Ergonomics is the study area that is concerned with the attempt to minimise the adverse effects or prevent the failure or breakdown of such systems. This resolution of differences between men and machines is effected by the design of better interfaces and improved communication links between the system's components of man and machine. It could also be achieved by improving the ability of the human component of the system or the design of the machine.

The effect of conflicts or incompatibility in simple socio-technical systems could be said to be broadly similar to the effects of incompatibilities in complicated electro-mechanical systems. This could be depicted as in the earlier figure, Fig.2.1(b), which has a one to many causal relationship.
The system becomes, at this stage, stochastic rather than deterministic as in the earlier example, but it should be noted that this system is still not representative of the more complex socio-technical systems.

On the highest level of complexity known so far are social systems/human activity systems which have multi-dimensional, multi-layered, multi-spatial intra- and inter-system relationships that are so complex as to yet defy complete understanding and therefore modelling with the use of most types of approaches. Even holistic approaches which have proved to be appropriate for other systems have not achieved the same degree of success with this class of systems. The study, analysis and modelling of such systems has to rely on the use of reductionist approaches; explanations have to be based on functionalism expressed empirically.

The causal relationship of conflict in simple social systems could be said to be on a 'many-to-one-to-many' basis in that multiple causes can develop into a major effect which could in turn become a cause generating several effects. In complex socio-technical systems, this is also a common feature and it could be diagramatically represented as in the following figure. (Fig.2.1c).
Fig. 2.1(d) below shows a system which is a purely social system and which with multiple causes directly yields multiple effects without the transformation of any major cause or effect, but with all the causes playing significant roles in influencing each other and any of them could become a catalyst of a potential conflict situation.

The systems in Figs 2.1(c) and (d) become more probabilistic, and the effects more uncertain as the complexity develops. In most hard systems, there is an empirical validity of states which enables similar systems to be engineered regardless of context, with minor variations in result: major deviations probably reflect an aberration or the introduction of new elements or variables into the system. Repeatability cannot be guaranteed in human activity systems because of the increasing level of complexity and the number of unquantifiable variables inherent in
such systems. While it must be acknowledged that there is considerable overlap between the upper levels of one class of system with the lower levels of a higher class, it could safely be concluded that human activity systems are inherently more complex than other systems.

Advances in Artificial Intelligence and Intelligent Decision support systems are blurring the division between complex socio-technical systems and social systems; but, inasmuch as the final decisions are still being made by the social system (and because these decisions are time-bound), it is still reasonable to conclude that social systems are more complex. This linked variability in the complexity of cause and effect over time is what makes social systems unique, and is the major difference between hard and soft systems.
The ability of conflict to remain covert until certain circumstances enable it to manifest is closely linked with its dependence on time and space. An overt conflict could become covert over time if one (or more) of the parties is forced by circumstances towards a situation in which its continued existence as a system is threatened (due to its own inadequacies or the overwhelming superiority of opposing parties).

The development, intensity, scope, duration and level of conflicts depend on the interplays between various factors among which are:

(a) complexity of the system's relationships/interactions;
(b) availability of resources that could be committed to conflict;
(c) intra-party solidarity;
(d) support from key parties within the wider system;
(e) effect of conflict on the wider system;
(f) opinion of the wider system;
(g) capacity for and commitment of parties to conflict;
(h) objectives of the parties; and
(i) the gap between the "status quo" and expected future states.

These and other factors influence the externalisation of the conflict process to such a degree that the lack of overt conflict, as Coser[1956] pointed out, might be a sign of hostility born out of repression rather than peace; lack of an overt conflict could also be borne out of the fear for the
reactions or repercussions that might follow an overt expression of conflict, especially if one of the parties is disadvantaged by some of the factors listed above.

The following figure (Fig.2.2) depict in diagrammatic form how conflicts become externalised from a covert position during interactions and how it could revert to covert conditions under different circumstances or how new differences might develop into a new conflict after a "normalisation" of interactions. The problem of representing this type of concept in a diagrammatic form is partly due to the large number of possible interaction states in complex systems.
Intervention and normalisation

Externalisation

New differences

Intervention and normalisation

Intervention and normalisation

Externalisation

Differences, issues, causes, etc.

COVERT

‘NORMAL’ INTERACTION

OVERT CONFLICT

Fig. 2.2 Conflict interaction pattern.
In the diagram, there is a loop depicting the development of situation over time. The diagram assumes that interactions are started on a "normal" basis but the situation could become potentially conflictual due to differences on issues, opinions etc. The first phase of the disagreement could be described as being a covert phase where the differences are not yet formally or mutually acknowledged and publicly discussed. The second phase is the externalisation of the differences and the formal declarations of stances, positions and opinions by the parties. This phase could also be characterised by ill-concealed or undenied hostile actions etc. Formal or Informal intervention could lead to "normalisation" or the continuation of the conflict on an overt basis. The conflict could also be driven to a Covert existence by circumstances only to re-emerge at a future time when one of the parties consider it to be appropriate for externalisation. This loop will continue until the conflict is resolved. "Normal" interactions could also exist after an intervention until new differences emerge to start a new cycle of conflict interaction pattern.

The figure shows the emergence of a conflict situation and the reversion to "normal" situation, and a later lapse into an ongoing conflict situation until resolution.

Galtung[1965], argued that conflict is time-dependent and develops over future states or preferred values rather than about the status-quo or existing values. He also contended that although it is possible for conflict to develop over preferred values alone (i.e. there might be agreement in the system on the inadequacy of the existing value system but disagreement over
preferred values or means), the existing system or value could not be said to be contentious because "...there is no incompatibility in what is".

If we adopt the description of an overt conflict situation as being one in which visible, identifiable and undenied actions and/or statements by one or more parties in an interaction system are intended to be potentially or actually damaging to other parties in the system, we could then use Davies's (1962), J-curve diagram to illustrate how conflicts develop over time. This is depicted in Fig. 2.3 below:

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Fig. 2.3 (Curve expressed in conflict terms. (Davies, J.C. 1962.)
Galtung (op cit) noted that the first condition for a conflict to develop is that the areas of incompatible goals in the system's spaces of interaction be occupied by issues being pressed by both parties. The second condition, he continued, is "...ensuring that the goal-states of the parties are at a maximum distance from the compatibility space."

In the light of these statements and my earlier points, conflict could then be said to develop as a consequence of the differences in perceptions of what is, what should be or what might be (i.e. over the preferred future state of a system, especially if there are some values attached to it). Fig. 2.4 is a representation of Galtung's goal-space showing the two interaction spaces of compatibility and incompatibility.

![Fig. 2.4 The goal state space. (Galtung, J. 1965)](image-url)
In order for conflict to develop therefore, the parties have to stay as close to G1 and G2 respectively and move from the left interacting space to the right space of Fig. 2.4. A representation of how this movement takes place over time and the points (in reality, phases) that lie in between the two extreme spaces at which the conflict situation could be prevented from developing is depicted in Fig. 2.5. These decision "points" in an interaction system are the Y-points in the diagram. They are the points in an interaction process where the transition from competition or currently normal relationship to conflict may occur. They are also potential stability points where meaningful and possibly successful intervention could take place; the lower of the two points shown is clearly an important one, both for decision by the parties to conflict and for intervention by others (Full details about the construction and use of the Y-diagram is given in 5.6).
The development of conflict is also dependent (in some way, listed) on the size and content of the conflict space. The conflict space could be determined by a number of factors. The size and content of the conflict space could be relevant or irrelevant to the conflict. The relevance or irrelevancy of issues is a major determining factor in the scope of conflicts. Because important issues to be included in a conflict space are arbitrable, or in the case of the issues that will remain or are relevant to the conflict, the conflict space is also important to the parties involved. This freedom means that the parties will accept or reject issues, as well as to include issues which are not in themselves arbitrable, but which will serve as negotiating issues for later issues.

Fig. 2.5 Y-diagram of conflict development
The development of conflict is also dependent (in addition to the factors earlier listed) on the size and content of the conflict space in comparison with the "normal" interaction space. The conflict space could be broadened or narrowed by any of the parties or coalitions to include or exclude issues considered by them to be relevant or irrelevant to the conflict. This relevancy or irrelevancy of issue is a major determining factor of the scope of conflicts. Because the choice of issues to be included in a conflict space are arbitrary, parties/coalitions opt for those issues that will increase their support in the wider system or that might yield a favourable outcome for their respective positions. This freedom of choice also ensures that other parties may accept or reject what these issues imply; consequently, the conflict space might be broadened to include issues which are not in themselves seriously conflictual, but which will serve as bargaining issues for future trade-offs.

The role of the wider system is also very crucial in conflict development because key parties in the system might stand to benefit from a conflict situation or lose if one occurs. Since the original parties in most conflict situations depend very much on support from the wider system for the continued prosecution of any conflict, control over the outcome is almost always surrendered unwittingly to the wider system represented by some key parties. Once control has passed to the wider system, the probability of escalation before resolution increases, because the wider system is much less likely to have any recognised decision-maker or adequate control mechanism to resolve conflicts. Although it could manage situations to some extent, its major incentive for conflict resolution only occurs when its
own interests become threatened. Interaction system in many cases lack adequate control systems and this inadequacy is one of the issues that exacerbates conflicts and is examined in this study.

From the foregoing, certain empirical statements could be made about conflict developments over time.

i) It is possible for interacting subsystems to adopt opposite views on various issues without conflicts developing.

ii) Classification of issues into "normal" and conflictual within an interaction space is arbitrary, and time-and situation-dependent. It is also subject to unilateral change by any of the parties or bilateral changes by the parties if it is in their interest to do so.

iii) A single party in an interaction system could initiate a conflict but the outcome and termination of the situation depends on all the parties that have become involved during the course of the situation.

iv) In complex conflict situations, the views of the original parties do not necessarily carry any more weight than the views of the other key parties who have become involved.
2.3 Conflict Development (over time) and Characteristics of Parties in Conflict Situations

Mack and Snyder (1957) portrayed conflict as an adjunct to competition, interpreting competition to mean the "striving for scarce resources according to sets of rules governing the tactics to be used by competitors", while conflict was interpreted to mean a situation in which "...competitors disregard rules or when they seek to destroy each other in their quest for scarce resources". Pirages (1976) opined that "... competition-conflict relationship is best visualised as a continuum ranging from competitive-nonviolent-non destructive behaviour in conformity with rules at one extreme, to conflict-violent-destructive behaviour in violation of established norms at the other, with much of the intervening behaviour being neither clearly competition nor clearly conflict". He went on to conclude that "... a clear distinction between competition and conflict cannot easily be made in the real world".

I will argue against some of these opinions and claim that, in the case of Marck and Snyder, conflict situations could develop not only about rules but also about the "game" or "relationship" for which the rules have been formulated. I will also assert that, contrary to Pirages' conclusion, conflict behaviour could be distinguished from competitive behaviour, but that the problem of distinction is being able to recognise the transition from a "normal" or competitive phase of interaction to a conflict phase. This difference could be attributed to the fact that conflicts could be covert or overt and until it becomes covertly malevolent or overt, it might continue to be classified as competition in Pirages' sense.
The characteristics of parties vary during the course of a conflict but this variation could be said to be due to several factors. Among these factors are the following:

- a) perceptions of the situation;
- b) raison d'être for the conflict;
- c) intensity / level of conflict;
- d) scope of the conflict;
- e) communication links with opposition parties;
- f) views and roles of wider systems; and
- g) cognitive complexity.

Harris[1974], developed a classification of military conflict scales from normal interactions to total nuclear war; part of this diagram is reproduced in the following figure (Fig.2.6.).
<table>
<thead>
<tr>
<th>Type of conflict</th>
<th>Level of conflict</th>
<th>Military/Political relationship</th>
<th>Military activity</th>
<th>Political activity</th>
<th>Effect on national value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Peace</td>
<td>Only political aims operative</td>
<td>Exercises, flag-sharing, etc.</td>
<td>Normal trade and other relations</td>
<td>No threat</td>
</tr>
<tr>
<td>1. Cold war</td>
<td></td>
<td>Surveillance etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Tension</td>
<td></td>
<td>Redeployment, restrictions on relations etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Impedition</td>
<td></td>
<td>Harrasments, possible &quot;accidents&quot;</td>
<td>Possible break in diplomatic relations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Sub-belligerent confrontation</td>
<td></td>
<td>Two-sided impeditions, &quot;accidents&quot;</td>
<td>Trade and movement restrictions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Limited war 1</td>
<td></td>
<td>Skirmishes, minor military action</td>
<td>Declaration of war</td>
<td>National economies on war footing</td>
<td></td>
</tr>
<tr>
<td>6. Limited war 2</td>
<td></td>
<td>Major military action</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 2.6 Scale of conflict (Harris, J. 1974)–Columns 1, 3 and 6 are omitted after level 0.
The full classification showed the various responses of parties to different levels of interaction and, although it was developed for military use, it could with some modifications be made applicable to non-military situations. No specific use has been made here of this classification other than to ensure that similar stages for civil situations are borne in mind. It is necessary to take note of the importance of the factors earlier mentioned and their role in the development of conflict and in their contributions to the formation of the characteristics and responses of parties at various stages of a situation. The levels of conflict at various phases, and the subsequent "successful" prosecution of the process by one of the parties/coalition, depends very much on a favourable mix of these factors (and of course other factors which tend to be totally outside the control of the conflicting parties).

The analysis of these factors, and the effects of subsequent decisions on the situation may be said to be as "good" as the model from which they are derived and this model itself is only as "good" as its completeness and the accuracy of the data used in its design (completeness is used here to mean the degree to which the model represents reality of the situation which is being modelled). Therefore, in order to have a reasonable and balanced view about a situation, the model to be used must be "fairly" complete and "reasonably" accurate. The vagueness of such a prescription is intentional and indicates the unavoidable subjectivity in conflict modelling.
In order to understand the modalities of a system, it is essential that a model of the system should be developed and studied. For the model to be valid however, it should as far as is possible, be complete, accurate and representative. In technical systems, this is achieved by the physical reproduction of the system, complete in every detail even though it might be on a very much reduced scale (prototypes); these models are then studied, tested, and evaluated, with future decisions being based on the results obtained.

In socio-technical systems, a model of the technical aspect of the system will also be constructed while a selected sample of the human component will be assembled to operate the mock-up system (a recent example of this type of system is the newly approved Sizewell B nuclear plant). Because of the complexity introduced via the human element, total reliability on these
types of tests and results is unrealistic and impractical as the Hawthorne experiments of Mayo[1960], and the subsequent reports on it have shown. Dando[1981] also appeared to be questioning the reliability of some socio-technical system studies when their results are implicitly assumed to be valid for real-life situations.

Another example of socio-technical system modelling will be battle simulations to test weaponry, personnel, strategies, flexibility of response etc under various conditions. Human activity systems or social systems are difficult to model in a holistic manner but reductionist approaches tend not to be truly representative and thus decisions based on these approaches could be said to be flawed. Most of the disciplines listed in 2.1 have been engaged in conflict modelling to different degrees, but many of the developed models could be classified as Isomorphic or Homomorphic models.

2.4.1 Isomorphic models

An isomorphic model could be described as a model which represents the object being modelled on a one to one mapping basis. This involves the ability to represent "reality", element by element in all aspects and at all levels so that each component of "reality" is individually represented. Beer[1962], gave an example of an isomorphic model as a football match "...where a particular man on one team ....attend(s) to each man on the other team". Models based on this approach are more applicable to purely technical systems which are predictive by design and nature. Its applications to social or economic systems
are however inadequate and probably impossible as the synergy of the various interaction subsystems would make it virtually impossible to model all the individual parts. One major limitation of would-be isomorphic models is that several complex subsystems tend to be lumped together and treated as single systems rather than complex entities in their own rights. The peculiarities and uniqueness of the subsystems are thus lost in the vastness of the whole.
2.4.2 Homomorphic/Contingency models

Homomorphic models can overcome some of the above problems. These models are built on a mapping of reality on a many-to-one basis of transformation, and enables the retention of some of the relationships between the causes and subsequent effects. In order to use a homomorphic or contingent model for conflict study, issues and causes are first identified and isolated. These issues are then analysed individually with the aim of identifying the immediate cause of a conflict situation through the additive consequences of the isolated issues (i.e. synergy) in a rather deterministic cause and effect manner.

This is the sort of modelling used by various single-discipline approaches to conflict study. It can lead to situations where conflicts are studied, modelled, and consequently analysed on narrowly defined premises, or on singular points of view, which might not be wholly or reasonably representative of the whole situation. Although it could be argued that issues are best understood when individually and separately examined and analysed, it could also be argued that the compartmentalisation of causes into distinct and isolated issues leads to the unreliability and inadequacy of such models. This argues against its continued use for conflict study.

The use of homomorphic models for the study of non-trivial conflict situations in several cases yield simplistic explanations of the situation based on the additive approach earlier mentioned which excludes the influence of the inherent dynamism of interaction systems. Fig.2.7 is an example of
Fig. 2.7 Homomorphic model of the U.K. miners strike.
homomorphic modelling applied to the 1984-85 miners' dispute.

This diagram is part of an earlier analysis of this conflict carried out during the research programme with some assistance from the Advisory, Conciliation, and Arbitration Services (ACAS).

A cursory look at most of the analyses, reports, etc. revealed the inaccuracy and inadequacy of the models and the analysis. Undue emphasis was placed on the cumulative effects of the causes rather than on the interplay and interrelationships between them.

Homomorphic models would never be said to be very useful for complex technical systems and to a lesser extent for some social-technical systems. In large social systems, the utilization of such models is likely to be problematic not only because of the reasons earlier mentioned, but also due to their inadequate recognition of and attention to the dynamic nature of systems. These are important causes of failure for such models (which are intrinsically deterministic), because changing circumstances cannot be adequately reflected.

Their bias towards unique solutions (best or optimal), for problem situations is problematic in itself because in complex social systems, the unique solution might be for a symptom rather than for the problem and this solution might create other problems. It is with the aim of correcting these limitations that models using a relativistic approach with a multidisciplinary rather than a uni-disciplinary scope, are recommended. Relativistic approaches use similar models as the systems on a many-to-many relationship. This allows issues, views and levels of situations to be represented in varying circumstances, thereby giving a more 'complete' representation of reality.
A cursory look at most of the analyses, reviews, and comments on the dispute by various bodies shows that most of the analysts, parties and commentators used models based on this or similar concepts, mainly using a homomorphic/contingent approach to examine the dispute. A review of some of these analyses, commentaries etc revealed the incompleteness and inadequacy of the models and the analysis. Undue emphasis was placed on the cumulative effects of the causes rather than on the interplay and interrelationships between them.

Homomorphic models could nevertheless be said to be very useful for complex technical systems and to a lesser extent for some socio-technical systems. However, in large social systems, the application of such models are likely to be problematic not only because of the reasons earlier mentioned, but also due to their inadequate recognition of and attention to the dynamic nature of systems. These are important causes of failure for such models (which are intrinsically deterministic), because changing circumstances can not be adequately reflected.

Their bias towards unique solutions (best or optimal), for problem situations is problematic in itself because in complex social systems, the unique solution might be for a symptom rather than for the problem and this solution might create other problems. It is with the aim of correcting these limitations that models using the relativistic approach with a multidisciplinary rather than a uni-disciplinary scope, are recommended. Relativistic approaches or similar models map systems on a many-to-many relationship. This allows issues, views and levels of situations to be represented in varying circumstances, thereby giving a more "complete" representation of "reality".
2.4.3 Relativistic models

Relativistic models (RM) adopt a holistic approach to the study and analysis of conflict in complex systems. They are mostly based on the concept that conflict situations are best understood if analysed as affecting a linked set of sub-systems interacting to form a whole rather than whole systems in isolation. Emery and Trist (1965), argue that this approach will enable situations to be viewed as "....symptoms arising from a network of causes rather than ...specific problems with specific solutions....". Most conflicts are multifaceted and although their externalisation may be attributed to one or more immediate factors, analysis will probably reveal that the "immediate cause" might only be the catalyst which, in the words of Ackoff (1974) "...is necessary but not sufficient" to cause the situation, the situation may require an interplay between other factors that might not be easily identifiable or even acknowledged, but which may be equally important.

With its network basis, relativistic models could be used to show patterns of relationships to depict various influences and effects of causes on each other as well as their relative bearing on the conflict. This will, in consequence, enable the analyst
to represent "reality" in a more realistic and "complete" manner. This approach is feasible only with disciplines with "good" and "easy" interfaces with other disciplines. The Operational Research and Systems Analysis (OR/SA) approach (see chapter 3), is one of the disciplines that fulfils these criteria.

There is always a risk that irrelevant data/information might swamp an analyst in attempts to reflect all pertinent issues relating to a situation, but I will argue that a greater risk is involved if significant issues are overlooked during analysis. In most OR/SA analysis, reasons have to be given for leaving factors/issues out of the analysis, and also, in the cases of initially complex models, for not giving all factors or issues equal weight or their not being studied to the same depth. The essential thing, therefore, is to ensure that the developed model is validated for the uses to which it will be put.

Relativistic models are also continuously modified: i.e various phases of analysis use diverse techniques and tools in order to reflect the current situation adequately. Although OR/SA has been described as "solutions in search of problems" by various critics, the approach adopted for this research is more of a process for seeking expertise from wherever it is available than a prescriptive set of solution processes for possible conflict situations. Relativistic modelling forms the basis for the direction of my research and this thesis, with the ideas enriched by the concept of conflict ecology.

The conflict ecology concept is dealt with in the next section but could be briefly explained as the notion that conflicts grow out of particular environmental interplays dependent on the dynamic interactions in the defined system. Fig.2.8 is a
modified model of the miners' dispute using the same data as used in Fig. 2.7 but mapped on a relativistic instead of an homomorphic model.

Figure 2.8 Casual Texture (Ecology) model of the Miners' strike.
It could be seen from this diagram that all the causes are directly interacting and influencing each other, and therefore, the study of these causes individually without the effects of their interactions could only yield an incomplete model.

2.5 Ecology of Conflict

This concept extends the use of relativistic models and the causal texture concept of Emery and Trist[1965]. The approach regards conflict situations as developing and growing out of specific environments rather than as inevitable results of systems interactions. Ecology as used here, could be defined as the interfaces, interrelationships, interdependences and interplays that constitute an interaction system. Emphasis is given to the study of the ecology of a situation before any model is developed, and detailed attention is given initially to those environmental factors that could, through action or inaction, influence the behaviour of the system.

The set of interacting relationships between and within interaction systems could not be described as linear and their additive consequences could not, for most conflict situations, be used to define the total cause and effect of conflict in human activity systems (although this might be acceptable for lower levels of complex systems). The continued interactions and linkages could lead to the formation of a network of causes, which in turn might produce certain effects in perpetual reinforcing loops until an intervention breaks the loop or a conflict ensues.
It is apparent from these explanations that, in addition to the causal texture concept, the approach has also relied on Singer's notion of the producer-product relationship as used by Ackoff[1974], as well as the works of Spink[1977]. A major difference between this approach and the others is the basis of analysis; other approaches are applied to identify, study, analyse and explain conflict situations through the isolation of identifiable factors or parameters which are indeed co-producers and therefore should be considered as a whole.

This approach, on the other hand, is applied to the study and analysis of situations in a holistic manner whereby all identifiable co-producers are examined in relation to each other and to the system as a whole.

One inescapable conclusion that could be drawn from this and previous arguments is that, in real-life conflict situations, there are no spontaneous conflicts. What we have are developing situations maturing over time in a set of circumstances whose effect at a point in time is interpreted within the interaction space as conflictual rather than cooperative or "sensibly" competitive.

It could also be said in the light of previous statements, that there are no single causes of conflict. There are only multiple
causes. I will assert that despite the fact that conflicts could only develop from certain environments, not all similar environments are conducive to conflict development.

I will illustrate the validity of these statements with two short examples, but before that, I will depict how multiple factors influence each other, again using the miners’ dispute as an example. Fig.2.9 is a modified version of Easton’s[1965] influencing diagram and shows how the output of one subsystem becomes the input of another subsystem in a continuous closed loop but at each completion of the loop, the causes gather momentum through the addition of other causes or the exclusion of other causes due to fulfilment or realisation, until an intervention breaks the cycle.
Fig. 2.9 Influencing diagram (Modified from Easton, D. 1965.)
Another advantage of the conflict ecology concept over more basic relativistic models, is the flexibility which it allows for the use of various combinations of methodologies from diverse disciplines. This helps to elicit the root causes of conflict situations rather than the apparent causes, which might later be revealed by analysis as symptoms of the causes and not the "real" causes themselves. Fig. 2.10 shows the use of an Affect/Effect diagram to depict at a lower level of detail the causes and course of the miners' conflict development. The relationship between causes and effects is shown over time on the model and is based on the conflict ecology concept.

The diagram could be further developed to map other factors and trace their interdependency and relationships over time.

Fig. 2.10 Affect/effect diagram of the miners' strike' depicting the ecology of the conflict.
I now return to my earlier assertion that conflict development is very much dependent on the ecology of interactions. The two examples of interaction systems used for these illustrations are extreme, but very relevant in order to highlight the validity of the arguments in this section. The examples are drawn from international affairs and matrimonial relations interaction systems.

In the prevalent political and military ecology of today, if an American aeroplane were to be shot down over the Federal Republic of Germany or over Turkish territory, this would not be sufficient to cause a major conflict between the USA and the NATO country concerned; this is because there are no issues in their interaction spaces that would cause this act to be interpreted as a hostile one rather than a mistake. If the same aeroplane is however shot down over the German Democratic Republic [GDR], or Hungary, a conflict might develop. This is in essence due to the ecologies of the various interaction spaces. The ecology in relation to economic conflicts would involve different interaction spaces: in that contextual setting, EEC's perennial disputes over the community farm policies and the USA-Japan trade disagreements could also be cited and analysed to depict the necessity of a particular environment for conflict.

Personal relationships are governed by similar laws and regulations that govern all interaction systems; the development of conflict situations in a matrimonial system also requires a particular ecology. Let us assume that one of the parties in a
matrimonial system has seen the other walking arm-in-arm with another person of the opposite sex whom the spouse does not recognise or recall knowing. This act is in itself unlikely to lead to a conflict unless there has been previous incidents (factors), suspicions, rumors etc which together constitutes the ecology of interactions within which the incident of walking arm-in-arm takes place. If a conflict should develop, it is patently wrong to attribute this to the single incident which, is only a catalyst. These observations might seem trivial and the deductions simplistic but, in several analyses of real-life conflict situations, e.g. the Fiji crisis, the Iran-Iraq war etc, such simple cause and effect models were used. Sufficient formal notice was not taken of these trivial but key observations: this led to incomplete models being designed and analysed, with faulty and questionable decisions being made on the basis of these models.

Complex systems are recursive by nature, and, although conflicts could be classified as intra or inter-system, the underlying themes are much the same. At whatever level of recursion a situation develops, the ecology will possess similar properties to the ecologies of other conflicts, regardless of size or contextual setting. Ashby[1964], Beer[1962,1981] and Espejo[1979,1982], all argue that interacting sub-systems are systems in their own right within their defined environment and subject to any systemic laws or regulation that apply to other complex systems. Bowen[1977,1983], Checkland[1981] and de Reuck (1983) also supports this observation because, from
different methodological premises, they individually developed methodologies whose philosophies are compatible with the observation. In addition, these methodologies could be used in the identification, problem formulation and analysis phases of study on the sub-systems and the systems.

2.1 Evolution and Role of Methodologies

Various disciplines like Political Science, Psychology, Sociology, Mathematics, Cybernetics etc have individually developed methodologies for examining conflict situations. Many of these methodologies are qualitative by nature, while some are quantitative and others combine both features for situation modeling. It could be argued however, that while methodologies need to individually classified as descriptive or prescriptive, most of them are formalized procedures or processes for conflict
CHAPTER 3

METHODOLOGIES FOR THE STUDY OF CONFLICT

Introduction

This chapter examines the evolution of different methodologies from some of the disciplines that are involved in the formal study, and analysis of conflict in complex systems. It traces the roles of the different methodologies and their "bias" or orientation and represent approaches from OR/SA, Political Science, Cybernetics and Philosophy. It also reviewed as briefly as possible, the potential contributions of the methodologies to conflict study and some of their limitations as well as the possible enhancements that could improve these contributions. The methodologies are drawn from various disciplines and classified into three approaches. The factors that influence the development, scope and duration of conflict situations are also examined in detail in this chapter.

3.1 Evolution and Role of Methodologies

Various disciplines like Political Science, Psychology, Sociology, Mathematics, Cybernetics etc have individually developed methodologies for examining conflict situations. Many of these methodologies are qualitative by nature, while some are quantitative and others combine both features for situation modelling. It could be argued however, that while methodologies could be individually classified as descriptive or prescriptive, most of them are formalised procedures or processes for conflict
study developed from specific disciplinary points of view.

Because most of these methodologies are discipline-based, and consequently discipline-bound, the models developed from them, and decisions based on them, are implicitly dictated by, and limited to, the discipline of the analyst or the dominant paradigm in the analyst's profession. A major consequence of this methodological insularity is that emphasis is shifted from the "problem" to the technique or method for problem-solving, thus subordinating the problem to the methodology rather than the other way round. Another consequence is that ideas tend to revolve within the disciplines, creating some sort of "disciplinary in-breeding" whereby advances or development of the area of study by one discipline is not readily available to (or where available, not readily adopted by) analysts or researchers from other disciplines working in the same area.

The study of conflict in complex systems has been primarily concentrated on the following aspects of system relationships:

(a) the structural and hierarchical relationship in systems as well as the power distribution between the various sub-systems;

(b) the production and distribution of wealth, goods, and services in the system; and finally,

(c) the interpersonal relationships and interactions within the system.
Most political-science based methodologies examine conflict situations from the perspectives listed in (a), while the approaches based on Economics or related subject areas use the factors in (b) as the basis for their analysis and sociology based approaches emphasise the factors in (c) in their studies and analysis. One problem, already mentioned in Chapter 2, is that, as the level of complexity in interactions increases, the ability of any individual methodology or even discipline to faithfully model and effectively attenuate this complexity becomes correspondingly decreased. This view has been argued by, among others, Bertallanfy[1954], Beer[1962] and Phillips[1979].

The awareness of this phenomenon in the physical sciences led to the development of meta-subjects like Biochemistry, Electronics, Biotechnology and Chemical Engineering, etc.

In the Arts and Social Sciences, this awareness also led to the development of subjects like Econometrics, Psychology, International Relations, etc. These subjects and other meta-subjects were all developed to explain observed phenomena and solve perceived problems which could not be adequately explained or resolved through the use of existing paradigms. Von Bertallanfy[1954], argued that existing subjects are inadequate to cope with systems problems, and called for a "general systems theory", to serve as a synthesizing subject that would be of a multidisciplinary nature and which will focus on the "problems" rather than the discipline.

Conflict, like other possible situations in complex systems, require a systemic approach to focus on the problem instead of the methodology. The development of methodologies for conflict study has nevertheless been systematic and mono-discipline rather
than systemic and multidiscipline. There are notable exceptions to these developments however, and these exceptions include Von Neumann and Morgenstern[1944 et seq], who developed Game Theory from Mathematical and Economic principles. They also include Howard[1971 et seq], who developed Metagame Theory from Game theoretic and Political principles, Ackoff[1974], who argued for an interactive approach to problem solving, and Schelling[1960 et seq] who applied most of these principles in his treatise on conflict. The possibility of involving diverse disciplines in seeking solutions to perceived problems is one of the principles on which Operational Research and Systems Analysis (OR/SA) is based.

3.2
Operational Research(OR) and System Analysis(SA) Methodologies

OR as an activity evolved as a direct response to a major conflict situation (WWII); it was developed in circumstances similar to those mentioned in the last section, i.e existing individual approaches were perceived to be inadequate for the solution of the current and anticipated problem situations. OR is therefore, unlike most disciplines for conflict study, a consciously-evolved meta-subject evolved for problem solving with
contributions from several subjects, the emphasis being on the problem instead of any particular subject. The initial problems tackled by OR were mainly at the operating (often called operational) level rather than at tactical or strategic levels. Nevertheless, methodologies and techniques were appropriated from any relevant discipline and used to evaluate the factors that influenced a situation in order to produce reasonably representative models which could serve as aids to decision making.

When the nature of the problems changed from the operating to the tactical and strategic levels however, most OR/SA practitioners continued to use tools developed for operational level problems. This could only be achieved in one of two mutually exclusive ways, either to reduce the complexity of the problem to the level of the available tools or to increase the complexity of the tools to match or surpass that of the problem. Different practitioners took different options. In cases where the first option is taken, the problems are not really solved as a solution inevitably leads to other problems. The second option was adopted by other practitioners who developed very sophisticated tools in their attempts to obtain solutions.

One major limitation of the majority of these new tools is that they are still primarily suited to the operating level of system interactions. The situation became one in which there are sophisticated models based on simple and operational assumptions rather than simple models based on sophisticated, strategic or tactical assumptions. Although enhanced with some features for tactical and strategic level situations, the results were not robust enough to ensure the acceptance of these approaches for
higher levels of decision making.

This aspect of OR/SA development caused some users to perceive its relevance as applicable to operational level only and inappropriate for use in complex human activity systems. Frosch[1969], asserted that SA-based approaches "...are...part of the problem, and indeed causative agents". Zadeh[1972] argued that the techniques are inappropriate for dealing with real-life situations because "...precise quantitative analyses of the behaviour of humanistic systems are not likely to have much relevance to the real-world.....problems which involve humans....as individuals or in groups". Mitchell, in a comment earlier last year [1987], said that he is "$...yet to be convinced of the appropriateness of quantitative approaches to conflict study".

Hoos[1976], in an outright dismissal of the whole systems paradigm, and its usefulness to social systems concluded that "...mathematical precocity has saddled us with outrageously costly programmes that assure neither peace nor prosperity: technical virtuosity.....subvert[s] social planning". She continued about these approaches that "... they simply were not appropriate to the myriad of social tasks to which they were being assigned ". These and other criticisms about ORSA led to major discussions among the practitioners with many of them agreeing with many of the criticisms. Ackoff[1976] agreed with
most of the criticisms made against OR/SA approaches and argued that OR has become a discipline like any other and thus has lost its uniqueness as a multidisciplinary activity; the importance of such an activity was earlier stated in Ackoff[1966].

Ackoff[1976] explained the reasons for OR's predicament in the following words, "In its early days, the nature of OR was dictated by the nature of the problems it was asked to solve and by the nature of the science it brought to bear on those problems. Today the techniques of OR dictate the nature of the problems it deals with, and OR has become insensitive to relevant developments that are taking place on the frontiers of science and society". OR was becoming at that stage as paradigmatically insular as most of the other disciplines, Raitt[1979], however asserted that OR has no distinctive subject matter in the way physical sciences like Physics have and that "OR does not provide an accumulation of theoretical knowledge about the world". Dando and Bennett[1979], in the same vein, argued that "OR does not generate its own distinctive paradigm in the original Kuhnian sense". Nevertheless it was becoming increasingly clear that OR was generally perceived as a discipline (in the applied statistics mode) rather than as a multidisciplinary activity.

The internal debate about the role of OR was continued by Ackoff[1979a&b], Bowen[1977] and Dando & Bennett[1981], who concluded that the classical OR approach with its positivistic and quantitative bias "...has foundered on problems... that are complex, strategic, behavioural and social". OR was therefore ill-equipped to cope adequately with these problems because it had become a discipline with a prescribed set of tools rather
than developing its original meta-disciplinary nature. Recent developments however indicate that attempts are being made to revert OR/SA to its multidisciplinary nature and thus enable it to deal more effectively and efficiently with complex social systems. These developments are based on the flexibility of "soft" methodologies now increasingly being used in structured forms. Despite all the problems enumerated here, the ORSA approach is still suited to conflict research because of its inherent power and suitability\textsuperscript{3} coupled with its regained methodological flexibility, aiding in the study and analysis of complex systems.

3.3 General Conflict Methodologies

These methodologies are not necessarily solely related to conflict study or analysis nor necessarily developed for that purpose but they are treated here in the context of the study of conflict. Although the choice of methodologies for review was determined by the need to draw attention to work done outside and inside OR, I reviewed their applications and how they could be used to enhance each other in a manner which I consider to be in the best tradition of OR. Most of the available methodologies for examining conflict situations are formulated for different aspects or phases of conflict with their main thrust directed at
these phases. The methodologies are mostly developed by people who perceive some deficiency in currently used ones to adequately deal with the phases and therefore develop new ones or add new features to the old methodologies.

Some of the factors that could be said to have influenced the development of methodologies for examining conflicts are as follows:

(a) the "prima facie" existence of a conflict situation
(b) the need to study and analyse conflict situations generally
(c) the need to quantify values in a situation for analysis and choice of options.

Methodologies based on factor (a) will in most cases, be primarily concerned with the management and possible resolution of conflicts. Those approaches based on factor (b) will equally aim to assist in all phases of conflict whether prevention, management or resolution, while factor (c) based methodologies are likely to place emphasis on "winning" the situation, or at least minimising losses.

The methodologies that evolve from factor (a) situations are likely to be problem-oriented and pragmatic but without much theoretical formulation or background. The theoretical explanations for this type of methodology will, in most cases, be developed after real-life applications of the process and procedures involved. By problem-oriented, I mean that these methodologies are the subsequent codification of the procedures, processes, notations and expressions, etc that have been successfully applied in previous situations, which are now
presented in a structured format. The theoretical explanation for these methodologies are likely to be qualitative and descriptive rather than quantitative and prescriptive. These approaches are however, limited by the circumstances of their development, the developers' familiarity with, and knowledge of, other approaches that could be used to improve the methodology.

Methodologies derived from factor (b) are likely to be discipline-oriented although probably applicable to conflict situations on an empirical basis. The theoretical formulation for this type of methodology will usually precede its application to real-life situations. The codification of notations, expressions and procedures, etc., for discipline-oriented methodologies are initially applied to past situations (post-hoc) to test their efficacy before application on real-life studies. The classification of these methodologies as descriptive or prescriptive, quantitative or qualitative, will depend very much on the developers. Such categorisation is irrelevant for the purpose of this thesis because, for example, analysts and researchers have developed quantitative and qualitative methodologies from the same basis.

The theoretical formulation for methodologies based on factor (c) are also developed prior to possible real-life applications and will in most cases be quantitative and prescriptive. These
methodologies are primarily directed at coping with conflict situations rather than studying them. These classifications are not exclusive as many methodologies are based on two or more factors and therefore do not neatly fit into one specific class. A possible classification of these methodologies is given in Fig. 3.1.

Due to recent developments in some of these methodologies, the classification is incomplete, but it is reasonable to suggest that factor (a)-based methodologies will, to a large extent, be developed by practitioners. Factor (c) methodologies, on the other hand, are more likely to be developed by academics. Factor (b)-based models could be developed by either. In the next section, I examine some of these methodologies regardless of the factors on which they are based; but as indicated earlier, the classification is somewhat arbitrary and the classes are not distinct but overlap with each other on a continuous scale. The methodologies selected for review are drawn from seven main areas and are as follows:

International relations—Problem Solving Procedure
Sociology—Institutionalised Conflict Resolution Mechanism
Operational Research—Soft Systems Methodology

---Problem Formulation Methodology
Cybernetics——Viable System Model
Decision theory——Robustness Analysis Methodology
General systems——Ackoff's philosophy

Game theory——Metagame Theory and Analysis of options

---Hypergames

This selection is considered as a reasonable sample of available
**FACTORS**

<table>
<thead>
<tr>
<th>FACTORS</th>
<th>(a)</th>
<th>(b)</th>
<th>(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHODOLOGIES</td>
<td>Problem solving procedure of Burton Dereuck etc.</td>
<td>Institutionalised conflict resolution mechanism of Galtung</td>
<td>Games/theoretic based models</td>
</tr>
<tr>
<td></td>
<td>Soft systems methodology of Checkland</td>
<td>Viable system model of Beer</td>
<td>Metagame of Howard</td>
</tr>
<tr>
<td></td>
<td>Problem formulation methodology of Bowen</td>
<td>Robustness analysis of Rosenhead</td>
<td>Hypergames of Bennett et al</td>
</tr>
<tr>
<td></td>
<td>Ackoff’s philosophy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 3.1 Classification of models.
methodologies for conflict study: others will be mentioned as appropriate in later chapters. Ackoff's ideas are discussed as a general systems approach because so many of his models are drawn from areas which are considered to be outside the "classical" or orthodox OR/SA areas of study e.g. philosophy.

3.4 **Review of some Existing Methodologies**

3.4.1 **Problem Solving Procedure (PSP)**

This methodology was developed at the Centre for the Analysis of Conflict. The model demands a high level of interaction between a team of experts and opposing parties. Burton[1969] postulated the original concept for the approach based on experiences gained in real-life intervention in conflict situations. The original concept was called "controlled communication" and involves having a group of experts and parties in a conflict or potential conflict situation come together, and through a series of meetings and joint analysis, evolve a change of perceptions in the parties so that the conflict is perceived as a problem facing all of them rather than as a conflict with the other parties.

The key to the methodology's successful application is
therefore in the ability of the experts to change the perceptions of the parties through the representation of the problem in terms, words and concepts that are satisfactory to all the parties for the subsequent joint analysis. Mitchell[1981], examined the roles and relationships between the group of experts and the parties. It should be noted that because the methodology is a factor (a)-based approach, it originally had little theoretical support and literature backup.

The steps involved in PSP are as follows:

(a) assemble group of scientists;
(b) bring opposing parties together;
(c) bargain /negotiate;
(d) joint analysis by all the parties;
(e) resolve.

The determination of these steps has led to the evolution of a discernible structure for the methodology. de Reuck (1985) represented this structure diagrammatically as shown in Fig.3.2. There are three distinct phases in the diagram corresponding to the different interaction phases between the analysis and the parties over time.
Progressive integration of social attention structures.

Phase 1.
- Conflictual, mutual, exclusive frames

Phase 2.
- Consultants A, C, and B

Phase 3.
- Collaborative, shared, superordinate Cognitive frame

Fig. 3.2 Conflict resolution by problem solving. (From Dereuck, A.V.S. 1983)
In phase 1, the parties are said to be "talking at" each other through the consultants instead of "talking to" each other. Mitchell[1981], described this phase as "ventillating" because in this phase, the parties air their grievances and seek possible sympathy from the consultants. Phase 2 marks the beginning of the analysis of the situation, it is made up of two functions of analysis and negotiation/bargaining in alternating sequences depending on the progress of the "talks" and the attitude of the parties. In phase 3, the process becomes fully integrated and collaborative based on the assumption that the metamorphosis of the conflict situation to a joint problem has been achieved in phase 2.

de Reuck[1984] defined a conflict situation as "one in which the activity of one party actually or foreseeably comes to impose unacceptable costs, material or psychic upon another". He goes on to distinguish between conflicts of value and conflicts of interest, although he acknowledges the difficulty of determining the difference. The difference presumably decides how the transformation from phase 2 to phase 3 could be achieved by the consultants and the parties.

PSP is formulated on the notion that conflicts are "dynamic processes constantly absorbing new parties and exposing new issues". It attempts to aid the parties in redefining the issues so that only genuine issues are introduced into the conflict space and resolved. The PSP's classification of conflicts into "realistic" (extrinsic) and "unrealistic" (intrinsic), is very much similar to Coser's[1954] conflict classification. Coser interprets "realistic" conflicts as situations where there are genuine incompatibilities between the objectives or goals of the
parties. Unrealistic conflicts are said to be "illusory", where there is a lack of "rational" justification for the situation.

de Reuck[1985] argued that because conflict is a decision process that leads to change which in turn leads to further conflict, an intervention is required to break this continuous loop because conflict inevitably becomes a "...symptom of movement in the system...between those who seek new relationships or fresh terms of trade and those who prefer the status quo". PSP is thus an intervention strategy devised to evolve new relationships between the conflicting parties.

The main aim of PSP is conflict resolution rather than management or compromise. This aim is to ensure that the solution is self-supporting after the consultants have finished with the project. de Reuck[op cit], contended that this resolution is sought in the relationships between the parties through deciding between probable "alternative structural connections" A system's structure is considered in PSP to be of relatively consistent patterns, while relationships within the system are regarded as dynamic and fluctuating.

PSP analysis is more directed at relationships than structures, because in its paradigm, structure is viewed as an independent entity while relationships are viewed as dependent variables. Attempts are therefore made to change or modify the views of the parties from narrow individualism to "rational" holistic views.
The approach recognises the dynamic nature of systems and the subjective nature of views and costs of conflicts. de Reuck concluded that system's boundaries "...neither coincide nor remain static" and that costs and views are constantly re-evaluated in "generally upward" appraisals.

I accept the broad principles of this methodology, but note my reservations about the following features in the approach.

(a) The emphasis of the approach on relationship rather than structure goes against my opinion that these two aspects of systems are too linked together for separate analysis. Relationship is determined by structure and structure is determined by relationship.

(b) It advocates groups of social scientists specifically as the experts best qualified to act as consultants to the parties in conflict. This neglects the appropriateness of the expertise available from other areas like OR, Philosophy, Mathematics etc. and limits the expertise available to the group. In other words, why social scientists only?

(c) The analytical methods being used were not explained for comparative study or application: much emphasis is placed on communication. The analytical tools used by the consultants (if any) for helping the parties to clarify their options should have been included in the published literature as it is clear that every problem could not be solved by simple communication: that is real differences could not be communicated away in a simple and direct manner.

(d) Most of the methodology is based on and explained almost
exclusively in Political Science, International Relations and Sociology references. Problem solving approaches from the business and scientific subject areas like Decision Theory, System Dynamics, OR/SA were conspicuous by the lack of references to works done under their aegis. In these areas, substantial research has been and is being carried out on the same theme.

I have already quoted Mitchell[1987] as saying that he is yet "to be convinced of the appropriateness of quantitative approaches" like OR/SA in this field of study. This comment might also serve to explain the absence or under-utilisation of these approaches in studies conducted by other disciplines and reinforces my earlier comment on methodological insularity.

3.4.2 Institutionalised Conflict Resolution Mechanism (ICRM)

This approach was proposed by Galtung[1965], in an effort to build a mechanism for minimising the negative effects of conflict situations, while amplifying the positive aspects that conflicts contain. In chapter 2, I gave Galtung's definition of conflict as follows: "An action system is ...... in conflict if the system has two or more incompatible goal-states ". He distinguished conflict from frustration which he defined as "...the more general case where goals are not achieved for some reasons...", but added that frustration could lead to the development of conflict. The
distinction is essential because, if efforts by one party or others to obtain some value or objective is being thwarted or perceived to be so by other parties in the system, this might, over time lead to frustration and eventually to conflict. ICRM also distinguishes between inter-system and intra-system conflicts, and by implication, the means of resolving these situations (these are discussed separately). He defined inter-system conflicts as "...splitting the system in parts with each sub-system standing for its goal-state", and defined intra-system conflict as "...a conflict that can be found in the smallest sub-units of the system down to the individual player".

In the Ackoff[1974] sense, an intra-system conflict could be said to occur when sub-systems or components of a defined purposeful system are in conflict with other components or sub-systems in the defined system or in conflict with the defined system itself. Inter-system conflict however, could be explained in the same sense as a situation that occurs when autonomous and definable systems are in conflict with each other. This definition is based on the concept of recursion in systems. It should be noted that because ICRM is based and espoused on a behavioural notion of conflict, its expressions and terminology has had to be adapted to some extent, to systems language for use in this thesis. Fig 3.3 depicts various types of systems in conflict and their relationship as identified by Galtung[op cit] in the formulation of ICRM.
### Fig. 3.3 Types of action systems in conflict
(From Galtung, J. 1965)

<table>
<thead>
<tr>
<th>Individual Level</th>
<th>INTRA-PERSONAL</th>
<th>INTER-PERSONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective Level</td>
<td>INTRA-NATIONAL</td>
<td>INTER-NATIONAL</td>
</tr>
</tbody>
</table>

### Fig. 3.4 Consequences of ill-managed/unmanaged conflicts
(From Galtung, J. 1965)

<table>
<thead>
<tr>
<th>Individual Level</th>
<th>INTRA-SYSTEM CONFLICT</th>
<th>INTER-SYSTEM CONFLICT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INSANITY</td>
<td>CRIMINALITY</td>
</tr>
<tr>
<td></td>
<td>SUICIDE</td>
<td>HOMICIDE</td>
</tr>
<tr>
<td>Collective Level</td>
<td>DISINTEGRATION</td>
<td>COLD WAR</td>
</tr>
<tr>
<td></td>
<td>APATHY</td>
<td>HOT WAR</td>
</tr>
</tbody>
</table>
Another distinction made by Galtung[op cit] is between conflict behaviour and destructive behaviour. Conflict behaviour is regarded as not necessarily negative or destructive. Coser[1954], argued that conflicts might even "...play some unifying roles in coalition formation, ...... and the maintenance of the balance of power between opposing parties ". In the ICRM paradigm therefore, conflicts become problematic when the behaviours of the parties turn from conflict behaviour to negative and destructive behaviour.

The approach also notes that because conflict has a tendency to broaden in scope over time, bringing in more resources to fuel itself until the available resources become gradually exhausted, unmanaged or ill-managed conflicts tend to introduce destructive behaviour contrary to their former status. This transition from conflict behaviour to destructive behaviour is according to Galtung, due to "the frustration-aggression cycle" which is a continuous loop because "destructive behaviour tends to be self-reinforcing". This classification of behaviours into conflict and destructive is broadly similar to Ackoff's systemic categorisation of conflicts into benevolent and malevolent types of conflict. The consequences of unmanaged or ill-managed conflict situations on a system when the behaviour becomes destructive or the conflict becomes malevolent is depicted by Galtung[op cit], as shown in Fig 3.4.
ICRM is developed on the basis that there are two methods for managing conflict situations, namely Behaviour control and Conflict resolution. Galtung[1965] advocated the adoption of conflict resolution methods instead of conflict management approaches and defined conflict management as "...efforts made to keep the costs of conflict below a maximum level". He argued that behaviour control is a form of conflict management which is "...normally directed at regulating conflict behaviour to prevent it from becoming unbearably destructive" and therefore should not be adopted as a long term conflict resolution strategy. One obvious limitation of the behaviour control approach as a regulatory mechanism is that the conflict is not terminated or even necessarily reduced and might lead to an indefinitely protracted situation with all efforts directed at managing rather than resolving the conflict situation.

The ICRM is a model for resolution rather than management. Conflict resolution is defined by Galtung[op cit], as "....a process that leads the action-system to a state where the condition mentioned in the definition of conflict no longer exists". It involves the design of and building into an action-system of a mechanism that will attempt to resolve potential and actual conflict situations within the action-system by keeping the parties within the compatibility space of interaction (see chapter 2). It also identified three states of an action-system as Initial state, Conflict state and Solution state. These states are expressed in terms of the distribution of value within the system so that, in case of conflict, the mechanism could be activated to intervene and resolve the situation.
The model would also attempt to determine winners and losers and ensure the parties acceptance of the prescribed solution. The concept is that, on the current conflictual issue at least, there will be no future attempts to move from the final agreed solution state. The winner in a two-party conflict is broadly described as "...the party with most gains/least loss", while the loser is described as "...the party with most loss/least gains", all gains and losses relative to what they had at the initial state.

Galtung also argued that while military conflicts might "destroy value", economic conflicts may "generate value". He further argued that in economic conflict situations, it is possible for all the parties to be winners if, jointly, they all get more than was available prior to the conflict between the parties although the gains of one party might be more than others. It could thus be concluded that ICRM is a structural-based approach that attempts to redesign the structure of an interaction system in order to enable conflicts to be resolved.

The concepts of ICRM are broadly similar in outline to Ackoff's[1976] notion of ideals in that both aid the move towards futuristic achievable states that could be designed and incorporated into system structures. A major difference however is that Ackoff's ideals are, by implication, unattainable while ICRM is achievable. The model, although based on the behavioural sciences, accepts that other ideas like game-theoretic-based approaches could be used for the analysis and computation of the total value of the system in order to help determine the winner.
and the loser in a conflict.

In the arguments about the generation and destruction of values however, I believe that some confusion has occurred and conflict is being given the same meaning as competition. Value in an economic situation is generated during competition or at benevolent conflict level, but, after the competition level is passed or the interaction moves to a malevolent conflict state, it is doubtful whether value could be generated. There is some ambiguity over this transition phase and the contrast between military and economic conflicts as used in the example, is too great for adequate comparison. I have striven to secure other references about this methodology but without success, it is possible that more recent developments to the approach might have improved it and cleared some of its ambiguities but no sources have been found. It has also been impossible to secure unbiased opinions or comparative studies or reports on the use of the approach.

3.4.3 Soft Systems Methodology (SSM)

The SSM was developed from an "Action Research Programme" at the University of Lancaster - see Checkland[1976]. Although not primarily developed for applications to conflict situations, I have found certain parts of the methodology very useful for examining these. One such feature of the methodology lies in its
process for extracting and modelling in a logical and structured manner the individual perceptions of interacting parties in any problem-situation. These individual perceptions are derived from and through the development of root definitions for the individual parties.

This activity takes place during that phase of a study when an analyst applies his professional knowledge to the problem, in an abstract manner, in order to formulate conceptual models of the problem situation. It occurs in step 3 of the methodology's sequence of events as represented in Fig. 3.5. The models derived from these root definitions are not models of reality but models containing structured sets of activities expressing a particular view of the system identified and named in the root definition. It therefore enables a relevant system to be identified and named in order that the situation might be examined and manipulated to illustrate present perceptions and values.

The methodology is composed of a series of steps taken at various stages of a project. These stages are broadly classified into the Real-world phase and Systems thinking about the real-world phase. The phases and the various activities within them are diagrammatically represented in Fig. 3.5; although there is much adaptive movement between activities and phases.
Fig. 3.5 Soft systems methodology summary. (Checkland, P.B. 1986)
Naughton[1981], depicted the logical structure of the methodology as shown in Fig. 3.6.

I noted earlier that the SSM is not primarily a tool for the study of conflict. Its potential contribution could be substantial however, if it is used in conjunction with other approaches. The methodology attempts to provide structure to "soft" systems study without being restrictive. The technique of "root definition" has been found to be very appropriate when used to enable explicit expressions about the "system-in-conflict" to be made through the use of its tabular construct termed CATWOE.

CATWOE is the mnemonic for the table in Fig.3.7. It is used for the identification and naming of the parties in a system in order to clarify their individual perceptions (worldviews) about the situation under study.

SSM as a whole is an attempt to bring coherence and structure to the construction of models used for soft systems study. It is a well-structured guideline for tackling real-world ill-structured problems. Its relevance to the purpose of conflict study is, however, limited to the Root Definition and CATWOE concepts. The limitation of the approach could be attributed to various factors such as the following:

(a) It was not developed primarily for conflict study.
(b) It does not depict relationships between the sub-systems in an identified system.
(c) It is a pre-analytic data and information collection tool rather than an analytic tool.
(d) The methodology is ambiguous in its treatment of systems structures.
**Fig. 3.6 Logical structure of the SSM. (Naughton, J. 1981)**
Because of these and other factors, it is necessary to use the approach with other methodologies in order to exploit its full potentials for conflict study. Indeed, this method was adopted for the Ladworth Project in Birmingham when the SSM was used in conjunction with the Problem Formulation Methodology (PFM); (see the next section for more about the PFM). The Ladworth project was carried out for clients that included the following parties:

- the West Midlands Police,
- voluntary organisations,
- statutory agencies,
- council officials and
- city councillors.

A copy of the project report is included in this thesis as Appendix B. I remain in contact with the project administrator and committee members who have expressed a wish that I maintain a continuous relationship with the Project. This work is again referred to in Chapters 4 & 5.

<table>
<thead>
<tr>
<th>CUSTOMER (c)</th>
<th>Client (of the activity) beneficiary or victim, whoever is affected by the main activity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTORS (a)</td>
<td>Agents who carry out (or cause to be carried out) activities/transformation in system.</td>
</tr>
<tr>
<td>TRANSFORMATION (t)</td>
<td>Core of root definition, transformation process carried out by the system.</td>
</tr>
<tr>
<td>WELTANSCHUNG (w)</td>
<td>The outlook (often unquestioned) or framework that gives this particular root definition meaning.</td>
</tr>
<tr>
<td>OWNERSHIP (o)</td>
<td>Ownership of the system, control or sponsorship.</td>
</tr>
<tr>
<td>ENVIRONMENT &amp; WIDER SYSTEM CONSTRAINTS (e)</td>
<td>Environmental impositions, perhaps interactions with wider system.</td>
</tr>
</tbody>
</table>

*Fig. 3.7 CATWOE table. (Checkland, P.B. 1979)*
3.4.4 Problem Formulation Methodology (PFM)

Forrester[1961], Anderton[1970] and Checkland[1979a] have all argued, for different reasons, that the inadequacies and ambiguities of the language used for problem structuring and formulation, are largely responsible for the lack of standards in communications about systems. These factors are also responsible for the ambiguity in role clarification, relationships and issues. This criticism of "fudging" is relevant to most studies on human activity systems, very relevant to "soft" OR studies in general and particularly relevant to conflict study where many methodologies take the causes and effects of conflict as given and analysis is carried out on the basis of such ambiguous assumptions.

It was noted in the earlier part of this report that conflict is studied from diverse viewpoints and from different assumptions and premises; it could be said that because of this diversity of approaches, reasons, tools, disciplines etc., it will be extremely difficult to have a standard set of symbols to use for communication. However, due to this lack of clear, unambiguous generally-accepted language or notation for examining conflict situations, most analysts have tended, (subject to professional-knowledge constraints) to evolve ad-hoc diagrammatic representations of the system and situation being studied or examined. This tendency has inevitably led to ill-constructed diagrams, lack of standards, and inconsistency in symbol usage, with the consequence of ambiguity in interpretations as different users give different meanings to similar symbols.

The PFM uses notational diagrams that attempt to reduce these limitations in models used for conflict study in particular and "soft" systems in general. It is an attempt to evolve standard
notations that could be applied to the modelling of relationships, roles, actions and communications in a conflictual or potentially conflictual interaction system regardless of the contextual settings. It is predicated on the observation that causes of conflicts could be sought from these factors of a system rather than in one determinate cause at a specific time. Bowen[1970], argued that "...it is necessary to avoid defining an event as a starting point to a crisis.....the process...is theoretically infinite in times past and finite but essentially unstable in future time".

The notation of the PFM was originally developed by Bowen and Smith[1972], primarily for use on the construction of models for conflict in complex situations. It has since been improved and modified to enable it to be used as a model-cum-analytic tool for the problem formulation phase of conflict study. It is an interactive model that is designed to enable individual systems or sub-systems to be modelled and examined as distinct wholes when necessary and as components of wholes if required. Bowen[1979], explained the aim of the approach as "...intended to provide a framework for continuing discussions between analyst and client, and for exploring a growing mutual understanding of the problem-situation and issues arising from it". The summary of the notation and the rules for linking the symbols was given in Bowen [1983a] as shown in Fig.3.8 a, b & c.
Fig. 3.8(a) The PFM notation. (Bowen, K.C. 1983a)

Fig. 3.8(b) Purposeful action

(Rule 17 (Bowen op cit)
EXPLICIT RULES FOR NOTATION

Fig. 3.9 The problem of Problem Formulation. (Bowen op cit)
Bowen[1983b], states several advantages of the notation, among which is that it "imposes discipline on whoever is drawing the diagram by forcing attention to individual systems". The use of the notation by an analyst as a basis for exploration and communication about individual systems is one of its major contributions to conflict study. The problems faced by analysts during the problem-formulation phase of a study is depicted by Bowen[1983a], as shown in Fig.3.9. using the notation. It could be seen from the diagram that the relationships between the various sub-systems as well as the client-consultant relationship could be depicted in the same manner so that the whole system could be graphically "taken-in" and understood for study and analysis.

The methodology was developed primarily for conflict study in the OR context and is therefore of double interest in this present research. It is a factor (a)-based methodology and thus problem oriented although it is expressible in set-theoretic terms. The notation makes no allowance for overlapping systems and therefore each sub-system and system has to be individually represented; this might make the diagrams unwieldy unless considerable expertise in its usage has been gained. Another limitation of PFM is its inadequacy to incorporate "time" into the models although there is hardly any methodology that fully takes account of time as a resource and as a factor.

Although implicitly recognising these roles of "time" in conflict situations, the methodology's emphasis is clearly placed on "space" and in studies with critical time constraints, it would be time-consuming to construct models at several moments of time for every system and sub-system. In order to utilise the
methodology to its full potential, it is suggested that it should be used in conjunction with other methodologies, for the phases which PFM does not cover or for the factors it does not emphasise. The PFM has been used successfully for several, not primarily conflict studies as reported in Bowen[1981], Dakhel and Bowen[1987], and in the Ladworth project mentioned in the last section. It is also currently being used on a study for British Rail and is being adopted by a conflict resolution scheme as one of the conceptual models to be used in future projects.

3.4.5 Viable System Model (VSM)

This methodology is based on cybernetic concepts and is primarily concerned with the development of viable (robust and stable) systems. It was developed by Beer[1962, 1971] and partly based on the works of Ashby [1962], who had stated that in any system, "...only variety can absorb variety...". The model's thrust is therefore, directed at either increasing the variety of the system to match opposing variety, or reducing through filtration, the impact of the opposing variety on the system. The interest of this research in the methodology is in the methodology's
concepts for designing stability into systems.

Beer[1962], emphasised the importance of "robustness" in decisions, arguing that such decisions might have to be sub-optimal in order to be stable. The model regards complexity as a consequence of interaction between systems which Beer[1978], argued could only be managed through organisation. It also adopts the approach that there are common principles underlying all systems in terms of linkage, feedback and stability which could be defined by the synthesis of the information flow between the parts of the system. This commonality, and the recursive nature of systems makes it possible to map systems' relationships with little transformation.

The structures that are mapped out are constructed on neuro-physiological models whereby different aspects of a system are structured and modelled after some corresponding parts of the human body. Thus Beer[1966, 1971, 1979, 1981] speaks of the heart, the brain, and the sensors of a system. Beer[1986], asserts that organisations are "viable systems" engaged in a continuous struggle for survival against environmental opposition. He further argued that this struggle for survival is replicated at every level of a system because of the recursive nature of systems.

VSM is an attempt to assist a system to retain its viability, that is, the system's ability to adapt and survive in changing environmental circumstances. Beer[1966], maintained that each level of a system has to be viable within its defined environment as viable systems could only contain and be contained in other viable systems. Viability is therefore viewed as a structural
issue that could be built into a system from the smallest identifiable unit to the largest definable entity.

The methodology attempts to help systems generate enough variety and complexity through organisation (structure) to match the opposing environmental variety and complexity in order to remain stable and viable. Espejo [1977], portrayed the recursive notion of systems as depicted in Fig. 3.10.

In order to model external complexities when using VSM, models of each element in a system are developed, although Espejo [1979] correctly noted that when reality is being modelled, there is always the possibility of imperfect mapping. Beer [1981] listed five functions that could serve to define and describe any system: namely Policy, Intelligence, Operational Control, Coordination and Implementation. These functions are represented in varying degrees at every level of a system. Conflicts or problem-situations are attributed to mismatches between reference models and the system. The organisational structure of a viable system is modelled on the basis of how the five functions deal with the environment.

The structure is used to analyse a system and regulate its behaviour. The relationships and interactions at various levels also have to be analysed before any meaningful intervention could take place. Resolution of any mismatch or perceived conflict is carried out through a remodelling and or redesigning of the
Fig. 3.10 The recursive structure of systems. (From Espejo, R. 1977)
system's structural relationships and its information flow. The organisation structure in a viable system is depicted by Beer[1981] as shown in Fig.3.11.

The VSM has a lot of potential for conflict study if properly structured and used in conjunction with other methodologies. Its contributions would be valuable at the modelling and design phases of a study especially where new structures are required to replace an existing one. The methodology could also be used to validate the designs and conclusions of other approaches. Indeed Checkland[1981], states that VSM, among others, could be used to validate the output of the SSM.

In spite of Beer[1962]'s advocation of "robustness", VSM appear to be highly structured and inflexible, which might mean that the "human component" of a designed system is not given the required attention. The VSM thus adopts a planned-for or designed-for approach to systems which might cause the system to be unacceptable to the human components and thus lead to instability. Since it is the human component that will make any human activity system stable or otherwise, this inadequate attention by the methodology to the component makes it in its present form impractical for intervention in conflicts in complex social systems.

VSM has been applied on several real-live situations with the most complex reported project being the attempted redesign of the Chilean economy. This project was reported in Beer[1979, 1986] and in Espejo[1980]. It was later abandoned because of a violent change in the government through a military putsch. Inadequate attention to the human component of the system was unarguably one.
Fig. 3.11 Organisation structure of viable system. (Beer, S. 1981)
of the contributory factors to the change of government and the abandonment of the project. Espejo and Howard[1982], report on some work directed towards improving the methodology by enhancing the methodology with game-theoretic concepts (part of this work is the CONTROL.GEN program which is an important segment of the new CONAN software used for demonstration in Appendix A).

3.4.6 Robustness Analysis Methodology (RAM)

It is necessary first to look at the background of this methodology in order to understand my subsequent suggestions that it should be included in the tools used for conflict study. It evolved from decision theory with the view to enabling "stability" to be built into decision outcomes. Decision outcomes were classified by Luce and Raiffa[1954], into three broad categories of Certainty, Risk and Uncertainty. They defined Certainty situations as those "....situations where no elements of chance intervenes between decision and outcome"; this condition could be seen to hold for the mechanical, deterministic systems earlier discussed in Chapter 2.

Risk situations are defined as "those situations where the link between decisions and outcomes is probabilistic". These
situations are very much the same as those typical of socio-
technical systems also discussed earlier: probabilities have to
be calculated and assigned for the occurrence or otherwise of an
outcome subject to certain actions being taken. Uncertainty
situations are also defined as "...those situations in which it
is impossible to attribute probabilities to the possible outcomes
of any decision". These situations are also very much the same
as those of complex social systems, earlier discussed.

The similarities of the situations covered by conflict study and
decision theory, as well as the underlying concepts of the
theory, give the theory some relevant role to play in conflict
study because conflict itself, in its many phases is a continuous
decision process that covers the broad spectrum of Luce and
Raiffa’s classification. The choice of RAM for evaluation in this
thesis is a choice from the scores of available methodologies
under the aegis of Decision Theory.

The choice is based on the fact that RAM, with its primary
objective of building stability into decision outcomes through
robust decisions, shares a broadly similar objective with my
research theme which is to aid in the design and building of
stability-inducing mechanisms into complex human activity systems
using appropriate methodologies from any available source. If the
aims of conflict management and resolution methodologies include
keeping a defined system stable (which it inevitably does by
implication), the methods and techniques used or at least the
available tools for analysis, for the evolved structural and
relational models should include stable-state-producing
approaches like RAM.
A decision is said by Luce and Raiffa [op cit], to be stable 
"...if the system as modified by these decisions has a long-run
performance which is satisfactory (relative to the alternatives)
should no further stages of the decision sequence be
implemented". Systems could also achieve stability through
satisficing, which was defined by March and Simon [1958], as
"...finding any decision whose outcome achieve minimally
satisfactory levels on all objective measures" and further
explained as "...finding which of such satisfactory decisions
rates highest on just one of the objective measures".

The satisficing approach is thus seeking the highest common
denominator among some of the possible future states which, when
applied to conflict study, might be useful for conflict
management. It would, however, be inadequate for conflict
resolution purposes as it merely postpones hard decisions to some
future time. In some conflict situations, it could even prove to
be a dangerous approach to adopt because it might serve to
increase the course and duration of the conflict. An alternative
approach was therefore suggested by Beer [1967]. He argued that
decision-makers should not necessarily adopt the "best" or most
profitable policy in situations but rather pursue "robust"
solutions. He suggested some trade-offs of e.g profits for
"robust" policies that guarantees stability; especially if the
"best" solution might become insecure in future circumstances.
Rosenhead, Gupta, and Elton [1972], defined robustness as "...a
measure of the useful flexibility maintained by a decision in achieving near-optimal solutions in conditions of uncertainty" such robustness would be a very appropriate aspect of a solution for situations where "optimal" solutions will be inappropriate or unacceptable. These situations will include most conflicts in complex interaction systems.

The robustness of a decision is thus defined, in the words of Rosenhead[1980a], as "the proportion of all known "good" or acceptable system states which will still be attainable after implementation of that decision". Friend and Jessop[1977], following similar arguments, concluded that, "...any process of choice will become a process of planning (strategic choice), if the selection of current actions is made only after a formulation and comparison of possible solutions over a wider field of decisions relating to certain anticipated as well as current situations". Choices of action or response should thus be based on the defined optimal policies to be followed which relate "...to intentions for actions whenever situations arise which are seen to belong to certain defined classes".

These comments, from different sources and perceptions, are very pertinent to conflict study because they reinforce the notion that, in conflict situations, alternative viable "solutions" should be generated rather than the "best" solution which might prove unstable. The ideas also reflect among others, the views of Ackoff[1974] on interactive planning, which argued that desirable alternative future states could and should be planned for in advance. Conflict situation outcomes are in most cases uncertain and based on incomplete information, with the implication and consequence that "best" or optimal solutions
might be valid only within a narrow context. They could become invalid or unstable in the light of further information, new developments or after some time.

RAM attempts to generate as many good alternative solutions as possible instead of seeking the only one "best" solution. These multiple end-states will ensure flexibility in the plans and strategies, adaptability in the actions and in the implementation process due to the availability of choice. This approach was justified by Rosenhead et al[1972], who argued that "...where future variation in uncontrollable factors may significantly affect the outcome of ...a plan, it is inappropriate to aim the plan at the achievement of what appears on the basis of current information to be the "best" end-state for the system".

Rosenhead[1980] continued the trend of the earlier arguments and concluded that, by seeking only one optimal solution to a problem situation, "...one may by the initial implemented decisions, unreasonably restrict the possibilities remaining for the subsequent decisions so that little use can be made of the more recent information then available". He suggested that initial decisions should be made which permits the achievement of as many possible defined end-states as feasible. In complex situations, where there might be several robust decisions, a discriminatory factor is introduced into the model to test for its endurance.
The discriminatory factor introduced into such models is called stability. It is defined by Rosenhead[op cit], as "...the ability of the system (as amended by the initial decision or decisions) to perform well, should the subsequent stages of the ...plan be delayed or cancelled". The stability concept, as defined here, is very much similar to the VSM concept of stability which has been discussed earlier. The aims of the two concepts are also similar and it is reasonable to conclude that the VSM and the RAM could be used in conjunction with each other as they both have common areas for possible joint applications. With this account of the background of RAM's development, I now return to the methodology itself.

RAM uses a quantitative approach for its analyses and is set-theoretic in its formulation. The sequence of activities and the logical relationships between the sequences in the methodology from the inception of a decision situation to decision-taking is depicted by Rosenhead[1980b] as shown in Fig. 3.12.

The approach has five principal activities, labelled A to E in the diagram:

[A] construct a set of measures and agree on corresponding acceptance levels for each of the relevant effects of any decision sequence (activity 7);

[B] identify a representative range of alternative futures (activity 6);

[C] identify the set of possible decision sequences (activities 1, 2 and 8);

[D] model the consequences of different decision sequence for each identified future (activities 3,4,5,9 & 10);
Fig. 3.12 Flow diagram of robustness methodology.
(From Rosenhead, J. 1980)
select initial decisions or decision sets which (as measured by the robustness index - see below) are components of a wide range of acceptable decision sequences under most or all the identified futures (activities 11 and 12)

Initial work on robustness analysis (in its present form) was reported by Friend and Jessop[1969], and applied in the context of Urban Planning. The mathematics of the methodology is summarised in Rosenhead et al[1972] as follows:

"...consider a ...problem in which one decision must be chosen from a set D[=(d_i)] of short term decisions:
...one of a set S of alternative solutions will be realised in the long run. Any initial decision d_i will restrict the attainable plans to subset S_i of S. Suppose that some subset S_i of S is currently considered "good"...according to some ...satisficing criteria. A subset S_i of S will be attainable after an initial decision d_i....The robustness of d_i is defined as r_i = n(S_i)/n(S), where n(S) is the number of elements in set S".

Robustness and stability thus consciously become the necessary criteria for the choice of the initial decision from the set D, instead of the selection of the apparent "best" choice from the set S. The consequence of this is that emphasis is shifted from
The "plan" to the "process of planning", which in conflict terminology could be related to shifting the emphasis from the "solution" to the "process of resolution".

The application of this methodology has been primarily directed at planning, e.g. Friend and Jessop[1969, 1975], Rosenhead and Gupta[1968], Rosenhead et al[1972], and Rosenhead[1978, 1980a, 1980]. Its potential contribution to conflict study, however, lies in its extensive consideration of a number of end-states whose outcomes are not much inferior to that of the "best" end-state, but whose effects are more likely to result in stable situations than the effect of the "best" solution. Beer's VSM, although presented from a cybernetic viewpoint, is arguing for and evolving structures designed with goals and objectives similar to RAM's, while Bowen[1974], called for the development of a paradigm with similar aspirations.

The obvious neglect of the methodology by conflict researchers (obvious because of the lack of explicit references to the works carried out with the use of the approach in open literature); might be due to either the methodological insularity earlier mentioned in Section 3.1 or the lack of awareness of the potential contributions of the methodology to conflict study. It might also be due to the fact that the approach has no obvious facility for examining the options open to other parties in the system.

Rosenhead and Wiedemann[1979], has reported on further developments to RAM: this involves some extensions which aim to "incorporate explicitly...the interdependence of decision makers". Best, Parston and Rosenhead[1986] also reported on further work carried out with the methodology making note of the
fact that it was used in conjunction with other approaches like Delphi analysis and cluster analysis. Such enhancement would further improve the potential contributions of the approach to conflict study. While the importance of the facilities for analysing various parties' options could not be over emphasised, and the fact that RAM does not possess this facility could not be overlooked, its ability to enable different end-states to be modelled and evaluated on stability rather than optimising criteria makes this methodology a potentially powerful one, especially if used with other methodologies that possesses those facilities that it lacks. Methodologies like metagames/analysis of options, hypergame etc fit into this category.

3.4.7 Ackoff's Philosophy

Ackoff's ideas on conflict could not be placed in any one of the methodological categories of section 3.3. His approach to the study of systems (in conflict situations or otherwise) is holistic and his ideas on the relationship between cause and effect stems from the producer-product concept (or non-deterministic cause and effect) of Singer. In this section, I will not be reviewing any particular methodology of Ackoff "per se", but will discuss some
of the thoughts that underlie his concepts and ideas. Ackoff [1966], argued that conflicts could only develop in interaction systems where and when an action by one party has an adverse effect on the other party. He developed a model to explain this concept of conflict development as follows:

In a given environment \([N]\) where \(I_1\) and \(I_2\) are interacting systems, Let \(C_i\) = a course of action \(i = 1, 2...m\) (cause)

\[O_j = \text{an outcome } j = 1, 2...n \text{ (effect) }\]

\[U = \text{utility } \quad \text{EU = expected utility}\]

\[S = \text{purposeful state}\]

\[DE = \text{degree of exploitation}\]

\[DC = \text{degree of co-operation or conflict}\]

\[\mathbf{p}_i = \text{selected actions}\]

\[E_{ij} = \text{ways action are carried out}\]

Any conflict situation could then be represented, modelled or specified by the following:

(a) the presence of both parties in the environment \(N\)

(b) the \(P_i's\) of \(I_1\) and \(I_2\)

(c) the \(U_j's\) of \(I_1\) and \(I_2\)

In order to model the situation, it is computed as follows:

Let \((s|I_2)\) represent a state in which \(I_2\) is part of \(I_1's\) environment

Let \((s|I_2)\) represent a state in which \(I_2\) is not part of \(I_1's\) environment

If \(I_2\) and \(I_1\) are in the same environment, \(I_2's\) behaviour may affect \(I_1's\) behaviour.

If \(I_2's\) presence decreases \(I_1's\) expected utility, it could be
said that \( I_2 \) is in conflict with \( I_1 \).

If however, \( I_2 \)'s presence increases \( I_1 \)'s expected utility, it could be said that \( I_2 \) is in cooperation with \( I_1 \). The degree of conflict or co-operation between \( I_1 \) and \( I_2 \) (as it affects \( I_1 \)), could then be expressed as:

\[
DC_{21} = EU_1 (s|I_2) - EU_1 (s|I_1')
\]

If \( DC_{21} \) is positive, \( I_2 \) cooperates with \( I_1 \), if it is negative, \( I_2 \) is in conflict with \( I_1 \) and if \( DC_{21} = 0 \), then \( I_2 \)'s behaviour has no effect on \( I_1 \) and is not part of \( I_1 \)'s behavioural environment.

On the same continuous scale, the degree of cooperation between the two parties as it affects \( I_1 \)' is given as:

\[
DC_{12} = EU_2 (s|I_1) - EU_2 (s|I_1')
\]

and the difference between \( DC_{21} \) and \( DC_{12} \) is the measure of exploitation. In a cooperative situation, where the cooperation is unequal, exploitation is said to be benevolent while in conflict situations, where the conflict is also unequal, the exploitation is regarded as malevolent. In certain situations, where one of the parties cooperates with the other(s) while the other party(ies) is in conflict with the first party, the situation is adjudged to be "normal" presumably because the conflict has not been "joined" by the first party.

Ackoff[op cit] considers competition as regulated conflict (on a continuous scale) and agrees with the view of Rapoport[1961] whom he quoted in regard to such situations as saying that 

".....in a fight, the urge is to eliminate the opponent;"
in a game the problem is to outwit the opponent; in the debate, the goal is to convince the opponent". He then suggested three measures to change a conflict situation; namely, to remove one or both parties from the environment, to change the environment so that the effect of the behaviour of one party on the other is removed, and lastly to change the selected options/actions($P_{ij}$), the way they are carried out($E_{ij}$), or the utilities placed on the future($U_{ij}$).

In Ackoff[1974], the producer-product concept was explained as a situation where certain causes might be necessary but not sufficient for some effects. This is said to be "...because a producer is not sufficient for its product, other producers(co-producers) are also necessary. Taken collectively these constitute the producer's environment hence, the producer-product relationship yields environment-full(open-system) not environment-free(closed-system) thinking. Emphasis is thus placed on the interactions within the purposeful system in a manner that is very much similar to the causal texture concept of Emery and Trist[1965], as well as the conflict ecology notion of Spink[1977].

Ackoff[1974, 1979a, 1979b] argued that OR should direct its attention to the planning for and design of systems that are stable and yet inherently flexible enough to be adaptable to probable future circumstances. His arguments are based on the observation that complex social systems are probabilistic and non-deterministic by nature. These ideas on social systems and the concept of planning for such systems was examined by Ackoff[1974,1979b], under the four headings of Inactive, Reactive, Preactive and Interactive modes of planning. He partly
attributes conflicts to the modes of planning adopted for most systems design, and argued against the continued use of the Inactive, Reactive and Preactive modes.

He advocated the adoption of the Interactive mode of planning for the design of stability into future states in interaction systems. Interactive planning is based on three operating principles:

(a) the participative principle which seeks to involve the parties in the system in the planning process with the planners;

(b) the continuity principle which advocates a continuous process of planning that will involve revisions and amendments as the need arises;

and (c) the holistic principle that stresses the importance of simultaneously planning for every part of the system (at the same level) in an interdependent rather than in the isolatory manner that is common to other approaches.

The five phases involved in interactive planning were outlined by Ackoff[1979b] as follows:

- formulating the mess;
- means-ends planning;
- resource planning;
- organisational and management planning; and
- design of implementation and control.
These five phases are interdependent rather than distinct phases, and there are continuous loops forward and backward to other phases during the duration of a project. Ackoff[1974] further argued that most disagreements(potential conflicts), tend to develop because of means rather than goals or end-states, and thus "...problems and solutions are...snapshots of a moving process", which are in a state of "constant flux" due to the observed fact that "...purposeful systems and their environments are constantly changing" He concluded that "...problems do not stay solved", because "...problems are conceptual constructs abstracted from complex situations that are systems of problems, messes. Solutions are also abstractions....therefore solutions require....continuous maintenance and improvement".

The first point of note in Ackoff's ideas is the transformatory nature of the ideas themselves; this could be traced from his 1966 work on conflict with its hard, predictive and deterministic approach to his 1969 publication calling for a new approach to the study of social systems by OR/SA practitioners. His 1974 book further expanded the theme started in the 1969 publication and his subsequent works(1979a and 1979b) have continued the theme of adapting to developing circumstances. The potential contributions to conflict study lies in the conceptual formulations rather than any specific technique and although it broadly encapsulate several ideas within its framework, the choice of any particular approach is left to the user.

If we agree that conflict situations could be described as "messes" in the Ackoffian sense of the word(I believe we should), the ideas depict a structured approach that could be used on its
own, or in conjunction with other selected methodologies to study, examine and analyse a situation. Ackoff's "volte face" on ideas and his shift of emphasis from the "plan" to the "process of planning" led to a very long debate in the OR Society and contributed to the emergence of "soft" OR. Bowen[1983] among others expresses clearly his acceptance of Ackoff's philosophy and its influence on his thinking. Dando and Bennett[1981]’s seminal paper on the state of OR and the subsequent debate generated is to a large extent influenced by his ideas and undoubtedly also contributed to the rapid development of "soft" OR.

Ackoff[1974] explains the co-ordinated planning sub-phase of the holistic principle (earlier mentioned) as follows: "...all aspects of a system should be planned for simultaneously... e.g planning to reduce crime should involve all aspects of the criminal justice system and more: education, housing, employment, health services, welfare and so on.... in planning, breadth is more important than depth and interactions are more important than action". This statement accurately reflects the study on the Ladworth Project (Appendix B) and although the analysis was carried out with the SSM and PPM approaches, this reflection indicates the permeating influence of Ackoff's ideas on the field of studies of different types and on the potential uses to which the ideas can be put. It could be concluded that Ackoff's philosophy is problem oriented rather than discipline-oriented.
because his emphasis is on the process of resolution rather than on a particular means of problem-solving.

3.4.8 Game Theoretic Models

von Neumann and Morgenstern[1944 et seq] explained game theory as "..a theory with the general aim of extending the mathematical framework to enable one to analyze games of chance...and...games of strategy to decision situations regardless of context". Game theory is therefore essentially a theory for the construction and manipulation of games to simulate, understand and predict the probable behaviour of interaction systems. It is a development from probability theory and gambling theory but allows conflict situations and the parties subsequent choices of strategies to be quantified and modelled. In its original form, game theory is based on the notion that parties in a conflict situation(players), will make rational choices and options. e.g Schelling[1980] and Luce and Raiffa[1957].

Rationality is a concept that could be defined as the repetitive behaviour of a party or person in an expected pattern or manner in a defined circumstance that is consistent with commonly shared norms and values. Schelling[op cit], explained rationality as "..a collection of attributes..." and argued that irrationality could imply "..a disorderly and inconsistent value system, a decision among individuals who do not have identical value
systems...". Rationality in conflict situations thus presumes that the parties in such situations will act in a consistent and probably predictive manner with value-maximising strategies.

This notion of rationality and its universal application to conflict situation was challenged by Howard[1966] who argued that rationality may break down and give way to irrationality among decision makers(players). This is because, in certain situations, "irrational" acts might yield, eventually, better results than "rational" acts. Schelling[op cit], also pointed out that "...many of the critical elements that go into a model of rational behaviour can be identified with particular types of rationality or irrationality". The scale of behaviour from rationality to irrationality is thus on continuum rather than a discrete scale.

Howard[1968] demonstrated the probable breakdown of rationality through games like Prisoner's Dilemma. He proposed an improved version of the basic theory that could reflect this breakdown and thus remove this limitation. This version of game-theoretic approach is called meta-game theory. The presentation and application of the theory was improved by evolving a notation schema of zeros and ones that allows the theory to be applied to complex situations without the use of the complex mathematical formulae underpinning the theory.

One limitation of basic games theory which is also applicable to
meta-games is the inherent assumption during the modelling phase that the parties in a conflict situation are playing the same game or perceive similar situations; i.e. that the parties share a common perception of the situation. Bennett[1980], outlined a methodology that removed this limitation and enabled the perceptions of individual parties to be modelled in addition to their perceptions of their opponent's games or options. This methodology is called hypergames.

Another methodology being developed to enhance game-theoretic based models in general, and meta-games in particular, is Cybergames which is being developed by Howard and Espejo[1982]. It combines the features of the meta-game approach of Howard[1971] and Radford[1977] (also termed analysis of options), with the VSM of Beer[1976](earlier discussed) and the additional ideas of Espejo[1979]. Only meta-game and hypergame will be reviewed in this thesis since they, in my opinion, adequately highlight the contributions of game-theoretic based models to conflict study.

3.4.9 Meta-game Theory and the Analysis of Options (MT/AO)

Howard[1971] explained metagame in relation to basic game theory as a "...non-quantitative but fully mathematical theory". The methodology uses mathematical sets and relations to analyse and select preferable outcomes in conflict situations. A major difference between MT/AO and conventional game theory is what he described as "the third breakdown of rationality" and which
deals explicitly with possible "irrational" actions and options. This notion is recognised and modelled in meta-games but not explicitly recognised in conventional game theory. Howard[1975] argued that this advancement of meta-game has made it a more powerful tool than basic game theory partly due to its ability to "...produce certain conditional predictions..." that is obviously more representative of "reality" than the basic theory.

The options from which these predictions are made are expressed in terms of the binary notation; [1] is used to denote a favoured option, while [0] is used to represent an unfavoured option and [-] is used to denote an open option which might or might not be taken but whose effect on the outcome is considered to be minimal. The adoption of this notation is a significant break from conventional game theory and has made meta-game theory more "user-friendly" than the conventional theory due to its simplicity. The methodology however requires a close working relationship between the analyst and the client, this is because the building, development, modifications and interpretation of its models are best carried out in an interactive manner between the analyst and the client or representatives.

Shepanik and Howard[1977] described the MT/AO procedure as a "...sequential, client-interactive technique for the analysis of options in conflict situations in systems". Analysis is based on the data supplied by the client and collected from other sources.
The logical flow of the steps and activities involved in using MT/AO is given by the authors as shown in Fig. 3.13. In the approach, possible future situations are modelled (scenarios) and expressed in terms of the choices of the course of action (options), open to the parties in conflict (players). A group of players acting in concert is referred to as a coalition.

The methodology has been broadly applied to diverse areas of study like military conflicts as reported in Howard [1968, 1970], to economic/business situations as reported in Radford and Fingerhut [1979] and in Howard [1975], to social situations as reported in Howard [1973a] and to political situations as reported in Howard [1973b]. A copy of a situation analysis is attached as an appendix (Appendix A) using the computerised version of the methodology which has been developed as an application package.
1. List players and options.

2. Select a particular scenario p/s.

3. Select a particular player (or coalition), p/p.

4. Find all unilateral improvements for p/p from p/s:
   - If none exist
   - If any exist

5. Find all sanctions against p/p for p/s:
   - If none exist

6. Find all guaranteed improvements for p/p from p/s.

Fig. 3.13 Flowchart of metagame analytic procedure.
(From Shepanik, L and Howard, N. 1977)
The contributions of metagame theory to the analysis of conflict situations are significant; initially, it was confined in its application to users versed in mathematics, but it has since, been adapted especially through its associated computer software, to be used by anyone, with or without the aid of an analyst. One of its major contributions to the process of conflict study is its formal recognition of the differences in the understanding of rationality by parties in a conflict.

The evolution of a binary notation in the methodology to express available options for different players has simplified the complex process of modelling with game theoretic approaches. Its ability to model and analyse individual scenarios facilitates the predictability of the effects and possible consequences of each option adopted or rejected by the party using the model. The approach is best utilised however, as a tool for conflict management (if used as a stand-alone methodology), and not as a tool for resolution; because resolution requires all the parties in a conflict to evolve generally acceptable and mutually enforceable strategies that will remove the basis for the defined conflict, and MT/AO can only be used for one party or coalition at any one time.

The approach also assumes that the players/parties are playing or perceiving the same situation. I consider this assumption to be wrong and unreliable because experience has shown in various studies and projects like the Ladworth Project (appendix A) and Bowen [1981] that perceptions of parties in interaction systems differ not only in what they observe but also in their interpretation of events. MT/AO is a discipline-based methodology that has been made general enough to be regarded as a problem-
based approach. The solutions derived through the use of this methodology might prove unstable for two basic reasons.

The first reason is that it lacks the facility to model all the parties' options even with their intention to cooperate and thus it could not make simultaneous predictions. Secondly, because it is primarily best suited for use with one party or coalition, it tends to seek optimal solutions that is in the best interest of the client rather than the best interest of the system and thus it is an optimal seeking approach rather than a stability-seeking one.

3.4.10 Hypergame Methodology

This approach is a development from metagames and has overcome some of the limitations of MT/AO noted in the last section especially on the issue of the players perceptions. Bennett and Huxham[1980] asserted that, unlike MT/AO, the hypergames approach allows the consideration and analysis of "....possible types of perception from the different players perspectives of the situation in terms of strategies and preferences". The resulting model is then analysed as a whole in order to trace through the consequences of any assumptions.
The methodology is based on the notion that parties in a conflict seldom perceive the same situation (i.e., the players' perceptions of their own games and their opponents' games or situation usually differ from each other). Bennett [1980] gave the procedures involved in building hypergames model as follows:

a) specify models;

b) set up assumptions about each player's perceptions (i.e., construct games for each player) and

c) define a set of related games,

An example of how the use of the methodology could improve the analysis of situations is given by Bennett (op cit) with the use of two 2-player game matrices (one using the conventional games approach and the other using the hypergames approach) and reproduced here as Figs. 3.14 (a) and (b).

It can be seen from these two games that both players p and q have different perceptions of each other's games and strategies.

In post-hoc studies of real-life conflict situations carried out by Bennett [1980b], Bennett and Dando [1979], Bennett, Dando and Sharp [1980] on economic, military and social system situations, the results suggest that these differences in perceptions might have played significant parts in determining the eventual outcomes of the conflicts. Huxham and Bennett [1984] and Bennett [1986] have reported developments to the methodology such as using a binary notation of the MT/AO format to simplify
p, q are players
Sp represents p's strategy set
Sq represents q's strategy set
> p is p’s preference for each outcome
(one outcome 'cell' is shown)
> q similarly denotes q's preference

Fig. 3.14(a) Structure of a two-player game. (Matrix representation from Bennett, P. 1980)

Player p's game:
Spp(=Sp) is p’s perception of his own strategy set
Sqp is p’s perception of q’s strategy set
Each outcome 'cell' contains an expression of p’s preference for that outcome, >pp (=p) and his perception of q’s preference, >qp

Player q's game:
Spq is q’s perception of p’s strategy set
Sqq(=Sq) is q’s perception of his own strategy set
Each outcome 'cell contains an expression of q’s perception of p’s preference for that outcome >pq, and his own preference >qq(=>q)

Fig. 3.14(b) Hypergame representation of a two-player game.
(From Bennett, P. op cit)
presentation and also enhance the methodology with the use of the cognitive mapping techniques of Eden, Jones and Sims[1983].

Bennett[1980a] asserts that the methodology might be most useful firstly in the preliminary problem structuring phase, and secondly, in the format modelling and analysis phase of any conflict study. I agree with the second claim but differ on the first assertion, because like most game theoretic based models, it has no facilities or tools to identify and structure the relationship between the parties. Thus it is ill-equipped to properly structure the problem.

The methodology is also an optimal-solution seeking approach and thus might yield solutions which could later become unstable, especially since it could only be used by one party to a conflict rather than for joint use by all parties as a stable-solution seeking tool. This emphasis on optimal solutions means that sub-optimal or secondary but stable goals are not explicitly catered for. IIASA[1981] noted that "...... a first stage in modelling should be the identification of primary and secondary goals together with interlinkages which would have the effect of unifying the various system components and subsystems"

Fleissner(1981) concluded that "...It can never be claimed that one and only one model captures reality". This inference by Fleissner, that no simple methodology can be robust enough to
encapsulate all the dimensions of an interacting system, is most true when applied to conflict situations which, by definition, implies some elements of dynamic instability. One major and notable contribution of the methodology to the study and analysis of conflict is its introduction of the notion of formally recognising and modelling the different perceptions of the parties to a conflict situation.

3.5 Commentary on Chapter 3

All the methodologies reviewed so far have something to contribute to various phases of conflict:

(i) identifying and naming the parties and their world views;
(ii) structuring their relationships and consequently their problems;
(iii) modelling and analysing;
(iv) designing a new structure or solution;
(v) testing solutions in the light of new information; and
(vi) implementing solutions in accordance with plans earlier made.

Clearly what is required in this area of study is not the development of new techniques or even methodologies but a paradigm that could assist in the choice of the relevant methodology for the appropriate phases of a conflict situation from prevention to resolution. This thesis attempts to evolve such a paradigm that cuts across the disciplinary divide. If it were successful only in drawing attention to the availability and relevance of these methodologies, it would still be of value. In the next chapter, I will examine how some real-life conflict
situations have been resolved or managed. The aim is to elicit some common elements (if any) of these situations, either in the development of conflicts or in their resolution.

Introduction

This chapter explores how some of the conflict situations are settled and the reasoning for the various settlement approaches. I compare the approaches and argue for the adoption of resolution approaches that reorganize the relationships between the system in a way that is acceptable to the conflicting parties. I discuss through the aid of some existing real systems that have been successfully reformulated for our case study of a system that could have benefited from such a solution. I also look at the notion of legitimacy and perception: modification in relation to systems interaction, as well as how parties can make relevant or irrelevant to parties in a conflict situation to the situation with the introduction, elevating, withdrawal or rejection of these issues into or from the defined earliest stage.

This is a continuation of the theme started in Chapter 9. In Section 2.3, I discussed the development of conflict over time and used the T-diagram (Fig.2.6) to demonstrate the movement of interactions from "normal" to "open conflict" on an evolutionary basis, until an intervention intercepts and de-escalates this movement. The T-diagram showed the movement in interactions on both vertical and horizontal axes. It equally demonstrates how an intervention could revert the interaction back to "normal" although a new level of "normality" might now be more appropriate.

In the same Section(2.3), I used the J-curve diagram of Davies(1962) to depict the point of potential conflict and also
CHAPTER 4

CONFLICT MANAGEMENT, DISSOLUTION AND RESOLUTION

Introduction
This chapter examines the theme of how conflict situations are settled and the prospects for the various settlement approaches. I compare the approaches and argue for the adoption of resolution approaches that redesign the relationships between the system in a way that is acceptable to the conflicting parties. I discuss through the use of case studies two complex systems that have been successfully redesigned and one case study of a system that could have benefitted from such a redesign. I also look at the notion of legitimacy and perception formulation in relation to systems interaction, as well as how issues are made relevant or irrelevant by parties in a conflict situation to the situation with the introduction, elevation, withdrawal or rejection of these issues into or from the defined conflict space.

This is a continuation of the theme started in Chapter 2. In Section 2.3, I discussed the development of conflict over time and used the Y-diagram (Fig.2.5), to demonstrate the movement of interactions from "normal" to "overt conflict", on an escalatory basis, until an intervention interrupts and de-escalates this movement. The Y-diagram showed this movement in interactions on both vertical and horizontal axis. It equally demonstrates how an intervention could revert the interaction back to "normal", although a new level of "normalcy" might now be more appropriate. In the same Section(2.3), I used the J-curve diagram of Davies[1962] to depict the point of potential conflict and also
utilised some parts of the Harris[1974] classification to depict scales of conflict.

In the last chapter (i.e Chapter 3), I reviewed some of the methodologies currently in use for the study of conflict and contended that most of them are methodologies for the management of conflict situations rather than methodologies for resolution. In this chapter, I intend to examine the issues of management, dissolution and resolution of conflict and look at some systems that have been involved in conflicts in order to draw some possible general conclusions from the methods used by these systems to deal with their respective conflicts. I will also examine the levels of conflict, covering issues like perceptions of the parties and how conflict spaces are determined.

I shall conclude this chapter by arguing for the conscious redesign of interaction systems, basing my arguments on the evidence drawn from the three case studies presented. I briefly look at the question of "ownership" in intra-system and inter-system interactions and contrast conflict management with conflict resolution as well as how some of the methodologies in use could be synthesised and used for various phases in conflict study.
4.1 Levels of Conflict

Conflict levels could be said to be on a hierarchical scale, but with each identifiable concept that could serve to define these levels containing, and itself contained by, other related concepts. These levels are determined by the defined scope and intensity of perceived negative comments, exchanges, actions etc that accompany various phases of an identified conflict situation.

The scope of a conflict situation is dependent mostly on time, previous areas and degrees of interactions and available resources. Conflict intensity is, on the other hand, very much dependent on committed or committable resources, the raison d'etre for the conflict, from each party's point of view, and the objectives of the parties. The levels of conflict fluctuate in accordance with the combination of scope and intensity: thus, it is possible to have conflict situations of high intensity but narrow scope or situations of broad scope but low intensity. Conflict situations that combine high intensity with a broad scope might develop into a Hobbesian situation "where everybody uses all possible means of destruction against everybody else", unless a timely intervention is made to de-escalate the situation by reducing the scope and intensity.

Because the complex nature of interactions and structure of human activity systems makes the total elimination of "undesirable" conflict in complex systems an "ideal" rather than a "real" state, most research activities and studies are directed at keeping conflicts at manageable levels or at least preventing the
development of malevolent conflict (and, where it has developed, to minimise its effects).

The scope and intensity of conflict situations are determined by the interplay of the various factors that define the structural relationships and interactions between the systems. These factors include the Perceptions (i.e., the interpretation of the weltanschauungen) of the parties (e.g., of each other's legitimacy, actions, etc); the relevancy or irrelevancy of issues to the conflict (as seen by each party); and the relative Stability of relationship prior to the development of the current conflict situation. System's perceptions are formed and articulated by the decision-making sub-set of the system. By implication, this sub-set also determines the levels and degree of complexity of the system's relationship with other systems. These levels of interaction and complexity eventually determine the scope and intensity of future conflict situations.

Fig. 4.1(a) and 4.1(b) depict two opposite trends in systems' interactions and show various levels of relationships. Fig. 4.1(a) shows an escalatory trend from a close relationship into a malevolent conflict situation. Two examples of this type of relationship are the Iran-USA relationship from the period of the Shah till the present [Aug. 1987], viz. since a change of leadership occurred in Iran; and the USA-Libya relationship after a change of leadership in Libya from King Senussi to the present.
Fig. 4.1(a) Conflict escalatory trend in interaction

CLOSE
  ↓
  WARM
  ↓
  FRIENDLY
  ↓
  COOL
  ↓
  ACCEPTABLE
  ↓
  INDIFFERENCE
  ↓
  DISTRUST
  ↓
  COVERT HOSTILITY
  ↓
  OVERT HOSTILITY

Fig. 4.1(b) Conflict de-escalatory trend in interaction

OVERT HOSTILITY
  ↓
  COVERT HOSTILITY
  ↓
  DISTRUST
  ↓
  INDIFFERENCE
  ↓
  ACCEPTANCE
  ↓
  COOL
  ↓
  FRIENDLY
  ↓
  WARM
  ↓
  CLOSE
leaders of Libya. These interactions went from close relationships under the previous leaders to ones of overt hostility under the present leaders. Two examples that could be used to illustrate Fig.4.1(b) are the USA-Japan relationship and the Federal Republic of Germany-USA relationship. The USA-led alliance defeated these two countries in the second world war [WWII] but, since then, the relationship has developed in a pattern reasonably similar to Fig.4.1(b). (ie from overt hostility to close relationship).

Systems relationships from the "close" level to the level of "covert hostility" might be interpreted as "normal" depending on the previous levels of interactions. In the next three sections, I will be examining those factors earlier mentioned that contribute significantly to the levels of conflict: namely perceptions, stability and the relevancy/irrelevancy of issues.

4.2 Perceptions of Legitimacy

Legitimacy could be broadly described as what a majority or a generally accepted framework confers on a decision making system or on a decision itself. Legitimacy could evolve over time, derived from experience or force or in most instances delegated (devolved) from a higher authority. Rosenbaum[1975], argued that it could also be derived from "tradition, religion and judicial decisions" among other sources.

Perceptions are mostly based on the subjective interpretation of
facts, issues and observations set against some prior information set (database). They form the basis of systems interactions and could be said to be the pivot around which conflict revolves. Because all conflicts are in part (and probably a large part) traceable to different weltanschauungen and perceptions, any intervention in conflict situations ought to seek to minimize misperceptions between the parties. Most actions and reactions are formulated on these perceptions and, in turn, determine and help to formulate the opposing party’s responses and reactions on a continuous basis that will escalate or de-escalate an ongoing situation.

Systems interactions are based on role definition and role playing; these roles are either dictated by circumstances, forced by one party on the other(s) or generally agreed upon by the parties. In order for the system to remain stable within its defined interaction space and prevent the development of malevolent conflicts, each system or sub-system must be perceived to be playing its defined and accepted role. Any deviations or perceived deviations from these roles or disagreement over the roles by one or more of the sub-systems diminishes acceptance of the roles and consequently the legitimacy, of both the original role, which has been compromised, and the perceived new role, which has not been accepted or legitimized. This shift in the perceptions of systems on the legitimacy of roles is one of the
key determining factors of the level of conflict.

In an intra-system situation, a decision sub-system may be classed as illegitimate in various ways. It may be perceived by the system's owners (in the CATWOE sense, section 3.4) as illegitimate. Its legitimacy may have been withdrawn by the legitimizing or conferring authority as would be the case for example, in a democracy by the people, in a communist country by the party, and in a military dictatorship by the armed forces. On the other hand, illegitimacy may stem from a challenge to authority by a powerful minority who might challenge and possibly remove the authority through defeats at elections, purge of party officials, revolutions and coup d'etats.

Most systems structure and formulate their offence/defence mechanisms to match their perceptions and counter the effects of opposing hostile activities. Legitimizing authorities confer legitimacy on decision sub-systems that will best serve their interest in the light of threats and objectives. Because there is no identifiable logical structure to the process of legitimacy, my conclusion is that legitimacy is determined by subjective processes that change over time and circumstances depending on the objectives and means of the conferring authority.

In 1948, the People's Republic of China with more than 750,000,000 people and constituting about 95% of the Chinese population was deemed illegitimate and refused membership of the United Nations because of the USA veto in the Security Council, while the Nationalist Republic of China (Taiwan) with less than 5% of the population, was legitimized and regarded as speaking for
the Chinese people. This situation was reversed in 1971. In the case of Cyprus, where the situation is still fluid, the Greek part of Cyprus is currently deemed legitimate by the United Nations Organisatio(UNO), while the "de facto" Turkish part of Cyprus is regarded as illegitimate.

Legitimacy of individuals as leaders is similarly dependent on changing situations and political expediency. The political careers of Sir Winston Churchill and General de Gaulle prior to the second world war, during the war and immediately after the war tend to reflect this condition of legitimacy suggesting that leaders in war are not necessarily accepted in peacetime.

4.3 Concept of Stability

Political scientists and writers are mostly agreed on the notion that most systems in conflict are unstable. Indeed Jaros[1973], Rosenbaum[1975] and Pirages[1976] argued in varying degrees about stability and the absence of conflict in political systems. Sociologists like Phillips[1976] and Coser[1956] as well as Systems Engineers like Forrester[1971] also examined the effect of conflicts on systems' stability; while Cyberneticians like Ashby[1962] and Beer[1979] evolved means of designing systems that are capable of maintaining their stability in conflict situations.
Systems are basically composed of dynamically interacting sub-systems (a situation which makes the laws of thermodynamics very relevant and applicable to its study). The principles underlying thermodynamics makes the stability of a functional (or any interacting) system a relative issue, because the dynamism and complexity of its interfaces makes fluctuating relationships more realistic and "normal". Levels of conflict in such interacting systems therefore also depend on how the systems perceive the stability of their relationships. Distinction should be made however between structural relationships and general relationships as well as the attendant stability and possible fluctuations in these relationships.

Structural relationships are based on the intrinsic/inherent relationships of shared values and culture that has evolved due to geographical proximity or historical collaboration. Such relationships could also be deliberately designed and used to integrate systems, thus fostering interdependency on the systems to the extent that most sub-systems of the integrated system are affected. General relationships however are based on a more compartmentalised approach, without the in-depth impact on the systems that the structural relationship has.

Structural relationships are relatively permanent and can withstand and survive potentially damaging malevolent conflict situations although the relationship might emerge in a modified form. It is rather difficult to change structural relationships. General relationships are more flexible and malleable; they form the basis of most routine interactions and could be said to be the operational or executive aspect of interaction. These
relationships are ultimately based on individual structural relationship and their flexibility is based on the latitude given for interpretation by the decision sub-system.

Fluctuations (or flux) usually occur on a constant basis in general relationships and thus introduce some elements of instability into the interactions, but, in systems with strong positive structural relationships, these situations are not necessarily perceived by the sub-systems to be conflictual (at least not in the extrinsic or real conflict sense as used in Chapter 2). Ashby [1962] noted this inherent instability in complex systems but concluded that "...in conflict situations the system behaves to keep itself within the recognised area of stability...new conditions are tackled by defining new states for the system and if these new states result in instability, the unstable state is vetoed or matched, thus bringing the system back to equilibrium". Beer [1979], also argued that systems are always in a continuous state of change, and constantly striving to "...maintain...stability despite intra and inter system flux..."

The empirical validity of these statements on the ability of systems to maintain their state of equilibrium is limited in my opinion to general relationships rather than structural, and also largely applicable to technical and socio-technical systems rather than to complex human activity systems where equilibrium in interactions are constantly changing because of changing
perceptions or interpretations of actions. Toates[1980], after looking at a similar situation, concluded that an attempt to return systems of this type to equilibrium might lead to a situation with positive feedback "...where displacement is not self-correcting but self-enlarging". Espejo[1982] also concluded that a complex system, because of its nature of being in a semi-permanent state of movement, is almost always "...in a process of adapting, learning and evolving within the constraints imposed by its environment ".

Stability is thus a relative rather than an absolute concept, a state that could be achieved at various levels of interaction but which is very much dependent on the perceptions of the parties. These perceptions about the relative stability of the relationships also contribute to the definition and delineation of the levels and scope of a conflict.

Howard[1972] argued that while it is possible for one party in an interaction system to destabilise the system by starting a conflict, resolution of conflict and the accompanying stability requires the co-operation of all the parties involved in the situation. Each party in an interaction system develops its own set of standards against which relationships are measured and, as long as the system operates within those criteria, the sub-systems perceive it to be stable although external observers might perceive the situation to be unstable.

The differences in perception and the subjectivity of its nature could be illustrated with the following examples drawn from the UK system.
(i) Despite the fact that Northern Ireland and Scotland are constituent parts of the UK, a "stable" period or day in Belfast will not necessarily have the same meaning in Edinburgh because of the different prevailing situations in both cities.

(ii) Within the England sub-system of the UK system, perceptions are also bound to differ; an average "stable" period in the records of, say, the West Midland Police in Coventry will be given another interpretation in Guildford despite both forces being in England.

It could be stated that stability is not only relative and subjective but also dependent on existing circumstances. System perceptions are formed and adopted for the system by the decision sub-system and on the basis of these perceptions, the type and level of actions or reactions are formulated relative to the decision sub-system's interpretation of the interaction system's stability. One major objective of conflict resolution approaches is the reduction of subjectivity in the interpretation of available facts and observations.

Ritzer[1975] contended that most successful relationships are largely based on the "objective" interpretation of facts and
observations because all relationships exist as dynamic systems with tensions but the successful ones have developed enough structural stability or resilience to resolve potentially damaging conflict situations. It should be noted however that stability, whether structural or general, is determined by the issues on which the relationships are based and by those which the conflict is about. The next section examines how systems determine the choice of issues to include or exclude in the prosecution of conflicts.

4.4 The Notion of Issue Relevancy in Conflict Situations

In the last section, I quoted Howard[1972] as saying that although one party in an interacting system could start a conflict, all the parties involved has to co-operate to resolve the situation. This view is consistent with the premise that conflicts develop from policies, actions or perceived actions and general interest in defined "relevant" areas of interaction between the parties. While it is possible for the parties to hold totally opposed views on "irrelevant" issues without the risk of conflict, similar opposition of views on "relevant" issues are likely to lead to conflict if one of the parties wants this to happen. Once the conflict has been joined, the ability to stop it has passed to all the parties that have become involved.

The classification of issues into relevant and irrelevant are mostly subjective, time and situation dependent. Relevant areas of interaction could be defined as "those areas of interaction where an action system's primary interests are defined(acknowledged or not by other parties) as important or
crucial to its relationship with the other parties. Policies and actions of the other parties in these areas are therefore more likely to be critically scrutinised and differences might consequently be perceived and interpreted as antagonistic and intolerable. Irrelevant areas of interaction could also be defined as "those areas of interactions where differences in interests are acknowledged but tolerated by the interacting systems".

Because of the arbitrariness involved in the classification of issues, there might be some contradictory classifications or many qualifiers whereby sub-classes of certain relevant classes are made irrelevant or vice versa by the decision sub-systems for strategic or tactical reasons such as peace gestures, signals to the other party and actions intended to bring pressure. Any issue could thus be made relevant to a conflict situation, by being introduced or elevated during the course of the conflict into the conflict space by one or more of the parties at any time as a necessary or one more necessary issue to be resolved before the conflict situation could be defined as terminated. An issue that has been made relevant by one party however requires the mutual consent or acknowledgement of all the parties for it to be downgraded or removed and reclassified as irrelevant.

One implication of these definitions and explanations is that the delineation of areas into relevant and irrelevant classes are
subject to unilateral changes, in particular to make issues relevant, by any party to the conflict at any time for whatever reasons. In addition to those reasons earlier mentioned in the last paragraph, other reasons for unilateral classifications might include the following: to escalate or de-escalate the situation, or to get more bargaining or negotiating space. Another implication is that "normal" interactions are possible in areas regarded and classified as irrelevant, and differences of view in these areas could theoretically be ignored, at least until an irrelevant issue is elevated or reclassified by one of the parties.

The classification of issues is a function of the decision subsystems of the different parties. There is thus a degree of certainty of expectation of differences between the parties on the classification of issues or, at least, on the emphasis given to different issues. A change of a decision sub-system or a change in the perceptions of any decision sub-system might result in a change of the classification of issues. The following two examples are used here to illustrate the validity of the arguments in this section and although insignificant by themselves, the underlying principles are universally present in other complex conflict situations. The first example briefly examines an aspect of the superpowers' relationship and how an issue was made relevant by one party's decision sub-system only to be reclassified and downgraded by another decision sub-system of the same party after a change of government. The second example looks at the contrasting classifications given to religion in two democratic political systems, the USA and Northern Ireland.
The USA is a leading supplier of grain to the USSR, and despite covert and overt actions directly or indirectly against each other, grain supply among other economic issues, had been firmly classified as an irrelevant issue in the defined conflict space between the two superpowers. Although economic sanctions had always been a credible potential weapon, the effects on the USA farmers had always prevented its use. The situation changed however in 1979 with the USSR invasion of its neighbour, Afghanistan. The USA decision subsystem (i.e. the President) retaliated by placing an embargo on the supply of grain to the USSR, thus reclassifying grain supply as a relevant issue in the defined conflict space of their interaction system.

The USSR secured alternative sources of grain (e.g. from the EEC, Brazil, Argentina etc) and refused to classify the issue as relevant, resulting in the subsequent loss of sales by USA farmers and leading to thousands of job losses (source: Time & Newsweek Magazines 1980) and hundreds of bankruptcies. Later, in 1980, there was a change in the USA decision sub-system and one of the first actions of the new President was to reclassify grain supply as an irrelevant issue. The USA farmers were reported to have lost an estimated $100 million in income. The ease and subjectivity of issues classification is depicted by the contrasting attitudes of the different decision sub-system in the
USA system over the period concerned.

[2] **Classification of Religion in USA and Northern Ireland (NI)**

This example contrasts the approaches to religion in two "Christian" political systems. Although NI does not qualify as a "system" in the USA sense, for the purpose of this argument and because systems and subsystems are basically similar, the differences being of size and complexity rather than of essence or structure, this comparison is valid and consistent. The point I intend to draw out concerns the classification of religion in relation to politics within the two political systems.

The late J F Kennedy, President of the USA from 1959 to 1963, was a Roman Catholic who defeated Nixon, a Protestant in a largely protestant country. Kennedy's success was in part due to the classification (by the majority of national voters) of his religious sect as politically irrelevant (local elections might be different) with issues like ability, charm, youthfulness being regarded as relevant. In Northern Ireland however, these factors are irrelevant in comparison to religion. The very relevant issue of religion makes it virtually impossible at the present for contestants from opposing sects to win any elections in areas outside their religious boundaries. This example illustrates not only how an issue might be classified differently by similar but different systems, but also the difficulty of finding a logical means of determining the rationale behind the classification of issues. Perceptions, experiences and history tend to play an important role in some of the classifications.

Mitchell [1986] pointed out that "empirically...decision-makers
classify issues as more or less relevant (perhaps in some very rough order of importance) which alter over time rather than dichotomously into relevant/irrelevant". I contend that, if all areas of interactions between systems are regarded as being in the interaction space, a defined conflict space is of necessity contained within the interaction space, and what to make relevant is a prerogative of any of the parties, but what to make irrelevant is the joint decision of all parties. These decisions are based not necessarily on what is "best" or "good" for the system but what is "good" or "best" for each party from each decision—system's point of views. I thus disagree with Mitchell's contention of a hierarchically structured classification of issues.

Issues are almost always linked together at various levels and therefore this exposition does not assume discrete relationships between issues, rather, I regard these relationships as continuous. The classification and reclassification of issues determine the size of the conflict space in relation to the interaction space because the more issues are elevated or classified as relevant, the larger the conflict space grows and, correspondingly, the smaller the "normal" interaction space becomes. Eventually, there may be no "normal" and direct interactions: interactions will occur indirectly only, through other parties. The concept of conflict space is further examined in the next section.
4.5 Conflict Space

While it could be stated that there is possibly an infinite number of individual interactions between interacting systems, it could also be stated that the areas or spaces within which these interactions occur are finite and readily defined/delineated. Our main concern is directed at these finite spaces rather than individual interactions because conflict situations are defined, developed and prosecuted within these spaces. I concluded in the last section (4.4) that there is an inverse relationship between conflict space and "normal" interaction space because conflict space is drawn out of normal interaction space and as one grows, the other reduces until one of the spaces is reasonably eliminated in one extreme leading to a Hobbesian situation and in the other extreme leading to the total elimination of conflicts or potential conflicts.

Bowen[1985] concluded that "conflict states can only be fully stated in a many variable continuous space". In complex human activity systems, interactions take place in several spheres/areas which when viewed holistically form a definable interaction space. This systemic whole could however be broken into identifiable parts each containing structural patterns similar to the whole system (due to the recursive nature of systems). In any interaction system, the more interactions that occur between the various sub-systems, or the more there are coincidences of interest, the greater the possibilities of disagreements in these areas but not necessarily of conflict.

Conflict space thus delineates the areas/spheres of interaction
between systems that have been identified or defined by any of the parties as being relevant to a conflict. An increase in conflict space, although reducing "normal" interaction space does not automatically lead to an increase in the level or intensity of the conflict situation although its scope would be increased. This increase in scope might be due more to a strategic move (for whatever reason) than to an escalatory move.

One means of increasing conflict space is through the linkages of issues while another means is through reclassification. Howard[1973] identified two types of linkage: "causal linkages" and "linkage by definition". He explained causal linkage as "one-way only linkages" that are linked only by direct cause and effect, while linkages by definition affects and are affected by other variables. Conflict space is therefore determined by the number of various factors that are linked together and made relevant by one or more of the parties in the system.

The escalation or de-escalation of conflict is thus determined by the contents of the conflict space over time. Because time is a continuum with discernible phases, the period or phase when issues are moved from one interaction space to another is an important phase in a conflict situation as it could mark potential stability phases if the right intervention is made. These potential stability plateaux could be utilised for the prevention of escalation of the situation or to assist in the
process of de-escalation. The major difficulty in the determination of these points in time is primarily due to the inability of the intervening party or even the opposing parties to know the period when the other party might shift the goal posts.

Fig. 4.2 shows the inverse relationship between normal and conflict interactions and the phases involved over time during which one space expands at the expense of the other. It should be noted that because interacting systems are relatively independent of each other (i.e., in the control sense) the ability to reduce the contents of the conflict space is vested in all the parties and thus there are no owners of the system involved in the conflict situation. This lack of ownership is in contrast to some other types of systems and conflict situations which will be examined in the next section.

4.6 The Concept of Situation Ownership

The issue of ownership is one of the main differences between inter-system and intra-system conflict situations. Ownership is used here to denote a system that has responsibility (benefits or suffers) for the actions or inactions of generally or specifically defined sub-systems due to its defined responsibilities for these sub-systems. In most intra-system relationships, there are formally designed hierarchical structures which define relative positions and relationships.
Fig. 4.2 Systems Interaction Space.
within a system as well as its relationships with other systems. In such systems, clusters of subordinates revolve around and report at various levels to superiors who also form clusters at their own respective levels and report to higher authorities in a cascading chain of command.

Each subordinate's goals are defined sub-goals of the superior's goals and contained within the superior's goals thus making the superior's goals superordinate to the goals of his allotted subordinates. In cases of conflict between such subordinates over goals, objectives or means, the superior could intervene by virtue of his position to reconcile the differences and resolve any conflict thus making the goals compatible with others' sub-goals and with his own superordinate goals. This right (or legitimacy) to intervene, coupled with the subordination of the subsystems' goals to the superior's goals effectively confers on the superior the right of ownership of the system at that level of recursion in the system's hierarchical structure.

Inter-system relationships and any conflict situation arising in it involve relatively autonomous systems with some equality in status (this relative equality is in relation to goals and objectives rather than size or resources) with no mutually binding superior system to whom their differences of objectives, means and goals could be subordinated. Interactions between these systems do not follow any formally designed "modus vivendi"
on relationships and there might be no necessarily compulsive reasons for individual systems to subordinate their goals to any overriding superordinate goal although an agreed "modus operandi" might be in operation.

The Bowen[1981] notation is used in Figs.4.3(a) and (b) to depict the concept of ownership and in this sense refers to the subsystem (might be a person) that sponsors or controls the "named" sub-system (i.e., someone in charge).

This concept of "ownership" is in line with that of Checkland[1981] in his soft systems methodology that was discussed in 3.4.3. In fig.4.3(a), X is the "owner" of conflicts in system A between sub-systems B and C because the goals of the subsystems determine synergistically the goal of X and he is ultimately responsible for the performance of system A and any success or failure will be attributed to him. X therefore has an in-built incentive to prevent the development of malevolent conflict and in the case of one developing, to minimise the effect on system A. X can also enforce a solution on Y and Z which is considered to be in system A's interest rather than in the interests of subsystems B and C because the goals of the subsystems are subordinate to the overall goals of system A.

In Fig.4.3(b) systems B and C interact within a defined system (A) but with no superior system to intervene in any conflict between them. The subsystems are autonomous and relatively equal thus making the achievement of their respective goals and objectives the dominating influence in their interactions rather than the achievement of system A's goal (i.e., the containing system).
Fig. 4.3(a) Conflict in a system. (System has an 'owner'. From Bowen, K.C. 1981)

Fig. 4.3(b) Systems in conflict. (Environment of interaction system has no ‘owner’. From Bowen op cit)
The role of system ownership (which also incorporates conflict situation ownership) is relatively the same in most systems while the lack of it gives rise to virtually similar consequences. In industrial/management systems, conflict situations between subordinates are usually resolved at higher levels of the organisation structure because of the control function that is vested in the higher levels over the subordinates thus in effect making the higher levels the 'owners' of the lower levels and their attendant successes or failures. In similar organisations however, if a conflict situation develops between the management and the union of workers, a new interaction system becomes involved in which there are no superiors or subordinates; rather there are equal sub-systems with no identifiable "owner" or superior to enforce the superordinate view except in special circumstances or through some outside system.

4.7 Conflict Outcomes

Conflicts are prosecuted and maintained by the quantity, quality and timely deployment of available resources of the parties and their supporters which are allocated for the direct and indirect prosecution of the situation. These resources include information, hardware, software, time, level of support from other key parties and internal solidarity. The availability and effective utilisation of these and other resources on the basis of their strength and deployment determine how conflict
situations could be transformed. Conflict situations could be decided in one or a mixture of several ways, ie. it could be managed (suppressed, settled or compromised), dissolved or resolved.

Some of these "end states" are transient by nature, while others are inherently unstable and thus could breakdown eventually when there are changes in the circumstances of the parties. In this section, I will examine three of these possible end-states and how they could be achieved, arguing against the adoption of some of these approaches.

4.7.1 Conflict Management

Galtung [1965] defined conflict management as "the efforts made to keep the costs of conflict below maximum level" while Pirages [1976] regards conflict management as "an active process undertaken ...to maintain...stability..", through the strategy of "responsiveness", and the possible "...substitution of more remote issues for those that are ...more dangerous and pressing". Human activity systems exist in permanently continuous states of dynamic instability and therefore conflict management could be described as the process of keeping this instability within a defined tolerable and acceptable limit.

Conflict management should ideally be a temporary phase until an acceptable solution is found and adopted. There are however several approaches for managing conflict and the approach used or the mix of approaches adopted will have a bearing on any eventual resolution of the conflict situation.
One approach to conflict management is suppression where the stronger party in a conflict situation deploys its resources in such a way as to prevent the weaker party(ies) from overtly challenging its authority or legitimacy. de Reuck[1984] however contended that, because conflict is ultimately about alternative futures "...there can be no question, therefore of the suppression of conflict since alternative futures are forever before us". This contention is however of relative validity because, while it is correct that alternative futures are forever before us, it should be remembered that the parties may have differences over the desired future states or over the means of achieving agreed future states; that is why there is a conflict situation in the first place. Suppression could therefore exist in the present and this affects future states(South Africa and Afghanistan are examples of such situations).

Another approach to conflict management is settlement which could either be negotiated or imposed. Negotiated settlements involve the parties in conflict, with or without external interventions imposing conditions on themselves for the temporary cessation of the conflict. Imposed settlement involves the imposition of externally sanctioned conditions on all the parties or the imposition by the "winner" of the conflict of its own conditions on the "loser". Compromise is also an approach for managing conflict situations and involves bargaining between the parties.
for trade-offs of the various issues that has been made relevant during the course of the conflict. This strategy implies that most or all the parties get something of their demands and give up something of the opposition demands although none is likely to get everything it wants.

As formally recognised means to defined ends rather than ends in themselves, conflict management approaches are effective for limited periods of time but in the cases where suppression or imposed settlement approaches has been adopted, de Reuck [op cit] pointed out that "...if the coercive basis of the settlement weakens or is withdrawn, the conflict will well up again since the will to continue has only been constrained by duress". The validity of this statement extends in a modified form to compromise and negotiated solutions if an acceptable resolution is not readily available.

The limitations of conflict management approaches stem from the observation that these approaches do not remove the causes (extrinsic or intrinsic) of a defined conflict situation but rather, they attempt to maintain some sort of stability or equilibrium in systems relationship pending the conscious development or evolution of acceptable solutions. Due to the multi-dimensional nature of conflict situations (eg. dimensions of time, space, resources etc) however, some events might outgrow the scope of the conflict management approaches leading to renewed and increased conflict until a solution is implemented. Mitchell [1986] cited the Versailles settlement as an example of the transient nature of settlements and how easily they could be broken.
Coser[1956] argued that conflict is not necessarily negative but has its positive effects which includes the notion that "...the experience gained in the use of resources in one conflict might be valuable in the management of future conflict situations". Galtung[op cit] also concluded that "a conflict, properly maintained and managed at an adequate cost level may be functional in a particular culture" although he accepted that a mismanaged conflict could reinforce and eventually escalate a situation.

Empowerment and conflict substitution are two other approaches for conflict management: empowerment involves the provision of resources by an external source to the weaker party in a conflict thus enabling the weaker party to have enough resources to put it on a reasonably "equal" footing with the stronger party if the external source could not enforce its own solution on the situation, e.g. the USA arms supply to Afghanistan rebels and the USA arms supply to the Contras in Nicaragua are examples of empowerment. Conflict substitution involves the replacement or substitution of pressing conflicts with external conflicts in order to promote internal solidarity and mobilisation against perceived external "threat" instead of concentrating on internal "problems", e.g. de Reuck[1985] cited the Argentinian invasion of the Falklands Islands as an example of the conflict substitution strategy.
It is reasonable therefore to conclude that there are various means of managing conflict situation but that most of the approaches do not eliminate conflict but are concerned with (a) the resources deployed for its prosecution and (b) the scope and intensity of the situation, with the aim of regulating these variables. They are also concerned with the conduct of the conflict itself, in order to ensure that the situation does not become unbearably destructive. Examples of the application of conflict management approaches will include the following:

(a) Regulated warfare (broadly guided by the Geneva convention)
(b) United Nations troops in trouble spots (e.g. Lebanon),
(c) SALT treaties,
(d) Complaints boxes in organisations, and
(e) Acknowledged "areas of influence" of the superpowers.

Conflict management is a temporary phase or at least should be regarded as one because, after some time the conflict, if it does not reappear in much the same form as before might develop in one of two ways: it could either be resolved or, due to the lack of (or insufficiency in) some of the resources by one or more of the parties, the situation might become dissolved. This dissolution is also a temporary phase but its transiency is patently different from the transiency of conflict management.

4.7.2 Conflict Dissolution

Dissolution is a temporary termination phase in conflict situations which is marked by a cessation of sustained overt
hostilities by the weaker party coalition in the situation. This phase might last for a long period of time. In general, it can be attributed to the depletion of resources of the weaker party and the eventual loss of its capacity and capability to continue the prosecution of the conflict. The stronger party can then enforce its preferred values. Because of this enforcement of values on the loser, it becomes inevitable that the loser will, at an appropriate time in the future, restart the conflict when it has acquired sufficient resources to challenge the initial "winner", because the winner has not been voluntarily recognised, accepted or legitimised. Enforcement of the winner's values does not therefore lead to a permanent termination of the conflict situation.

de Reuck[1984] contended that when conflict situations are abandoned by the parties from exhaustion, the outcome is mostly "decided by external forces" and cited the case of Cyprus as an example. First, the Greek Cypriots invited Greece to intervene on the island and the Turkish Cypriots later invited Turkey to intervene; both communities now have minimal influence in the affairs of their own island. Conflict dissolution could lead to a temporary de-escalation of overt conflict and force it into a covert existence: but, unless the causes of the conflict are removed, there is a distinct possibility that the conflict might re-emerge in a more malevolent form in the future, because the dissolution has merely put the conflict in abeyance.
The dissolution phase could however be turned to a resolution phase if the "winner" decides to seek resolution to the conflict rather than impose its own solution on the situation. The phase corresponds to one of the Y-points in Fig.5 of Chapter 2 where stability could be achieved if the winner could resist the temptations of enforcing its values on the loser. Examples of dissolved conflict situations in which such opportunity existed(or still exists) are the conflict over the Falkland Islands between the UK and Argentina, and the industrial conflict between the NUM, representing the majority of miners in the UK, and the British Coal( formerly NCB), representing the management of the industry and, to a large extent, the Government. A more detailed case study of the latter conflict is included in a later section.

4.7.3 Conflict Resolution

Resolution is the phase at the end of which the conflict situation as defined by the parties is acknowledged by them as terminated due to the removal or acceptance of issues that had been relevant to the situation. The resolution process is thus the series of actions, inactions, events etc. that, by design, lead towards this termination. The phase is unique in that elements of finality are included, present value is distributed and future value distribution is agreed and accepted by the parties.

de Reuck(op cit] asserted that resolution "...implies a solution
freely acceptable to all concerned, one that does not sacrifice any of their important values, and one that none of the parties will wish to repudiate even if later they are in a position to do so". He went on to quote John Groom as saying that resolution "... implies transforming the very grounds of dispute and reaching an outcome that is self-supporting in the sense that it is positively advantageous to all the parties involved".

Conflict resolution is therefore a process through which interactions in a defined interacting system have been consciously shifted from the defined conflict space back into the "normal" interaction space. This state of affairs could be achieved through different approaches, among which are:

(i) agreement on goal-states and means;
(ii) reconciliation of objectives and means;
(iii) transformation of conflict issues into problems that require jointly derived solutions; and
(iv) re-evaluations/re-appraisal of relationships.

Luce and Raiffa[1957] explained that solutions could be defined in a system if the following conditions hold:

(a) "there exists an equilibrium pair among the jointly admissible strategy pairs; and
(b) all jointly admissible equilibrium pairs are both


Schelling[1980] defined an equilibrium pair as "a pair of strategies for...players such that each is the player's best strategy that can be coupled with the others", while he defined a jointly admissible strategy as "a pair that is not jointly dominated by another pair, i.e. it yields a pair of pay-offs that are not both inferior to the pay-offs in some other cell".

Groom and Webb[1985] argued for the adoption of facilitation as a means of resolving conflict situations; their arguments are based on the premises that only the parties in conflict can evolve lasting solutions to their situations and that a sub-system is required to act as a facilitator who will be "...a channel or conduit encouraging this to occur". The aim of the facilitator will then be an attempt to aid the parties in the evolution of jointly admissible strategies.

Conflict resolution could evolve from either the conflict management phase or from a dissolution phase; but, moreso than the other phases, it requires the co-operation of all the parties in the conflict as it is the termination point of the situation and the redefinition of a new "normal" interaction phase and space. This new phase and space involves the general acceptance of a redesigned interaction system whereby issues and relationships are re-classified. It might even be possible that, superficially, the status-quo will be retained: yet resolution can come about only if new interpretations are given to old facts and the relationships redesigned to reflect the "new order". The concept of Systems redesign and how it could be achieved, with short case studies on systems that have been redesigned, is
further explored in the next section.

4.8 Systems Redesign (Case Studies on Conflict Resolution)

Pirages [1976], concluded that "much more is known about conditions that lead to the deterioration of...order (conflict situations) than about conditions and actions that maintain order". In other words, not much study or research has been devoted to the study of how stable systems attained their relative stability and the lessons that could be commonly drawn from such systems. This section examines some relatively stable systems. It draws some general conclusions from these systems on the basis of which an outline of a structure that could improve stability in complex system is subsequently formulated in Chapter 5.

Most complex systems evolve to their current level of complexity out of simpler systems and in most cases, due to the pressure of the environment, the systems would have been reactive or preactive in their interactions with other systems in the environment. This implies that these systems either respond to external stimuli as it occurs or predict likely events before they happen and then develop matching mechanisms to minimise any
undesired effects. It is implicit in this that situations rather than systems set the pace and direction of events ("situations" refers to the ongoing process of interaction and interrelationship).

Ackoff[1974] argued that the only way to give the initiative and drive back to the systems is through the adoption of an interactive approach to planning by the systems and a continuous redesign of the interacting system on a permanent ideal goal-state seeking basis. Beer[1978] called for the redesign of most complex systems in order to ensure their survival and continued viability, while Weinberg and Weinberg[1979] argued for systems redesign in order to improve stability. Galtung[1965] suggested a structure for a conflict resolution mechanism that could be incorporated in redesigned systems while Bowen[1970] also called for a review of the approach to systems design.

In the light of these and other arguments, and my personal observation of systems, it is apparent that systems need to be periodically reviewed, and when necessary redesigned if external complexity is perceived to have reached a level that is equal to the designed capability of the system to cope with it. In most of my own observations, the most relatively stable systems (i.e. those systems with the least destructive perturbations) have been found to be those systems that have been consciously and continuously redesigned and thus always possessing enough in-built robustness to cope with environmental complexity.

Von der Mehden[1964] attributed much of the conflict in developing countries to the structures inherited from colonial masters which had not been changed because of an inability to
develop(or evolve) new structural relationships between tribes, races, nations and countries. Bowen[op cit] argued that the approaches adopted for the study(and consequently the design) of solutions to conflict in social systems should be re-appraised. Systems redesign does not eliminate conflicts from interaction systems but in the cases that I have examined, systems redesign has succeeded in the conscious design and implementation of structural relationships that has replaced previous relationships and has produced comparatively viable, durable and stable systems.

The two case studies on systems redesign that follow are based on Switzerland and the European Economic Community[EEC]. A further case study(see section 4.9) on conflict dissolution is based on the recent dispute between the National Union of Mineworkers[NUM] and the National Coal Board[NCB](now British Coal).

4.8.1 Switzerland Case Study

Sigg[1983] described the Swiss state system as "the most stable in the world". This description was based on a comparative analysis of the Swiss system with some other democratic state systems. This is despite the fact that the Swiss state is affected by certain factors which jointly or individually has caused instability in several state systems, and even led in some cases to the eventual disintegration of those states.
These factors, which have contributed to the destabilisation of several state systems, include the following which I discuss in full later in this section:

(a) Multilingualism/Multiculturalism  
(b) Religious Differences  
(c) Industrial Relations and  
(d) Power Sharing.

The Swiss system has been consciously designed and continuously redesigned over time to prevent and resolve potentially damaging conflicts developing from these factors. In certain cases, mechanisms have been developed to manage conflict situations until acceptable solutions (stable solutions) were evolved, thus minimising the negative effects of these factors. This section examines how this has been done. The approach, intrinsically, is conceptually similar to the problem solving approach. I also mention some other state systems and the effects of similar factors on them.

(a) Multilingualism/Multiculturalism

Switzerland is bordered by Italy, France, Germany (FRG), Austria and Liechtenstein and thus very much influenced in its development by events in these neighbouring countries culturally and linguistically. There are four national languages in the country reflecting the population mix of the country. Three of the languages are classified as official languages and there are also several local dialects. 65% of the population are German-
speaking, 18% are French speaking, 10% are Italian speaking (these are the three official languages). 1% are Rhaeto-Romansch speaking (the fourth national language) and 6% speak other languages.

In many bilingual/multilingual and multicultural systems, e.g., India, Canada, Nigeria, Sri Lanka and Pakistan, serious conflict situations have developed over the role and status of languages and the "attempted subordination" of some cultures to others within the system. This factor has been partially responsible for civil wars in Nigeria, Sri Lanka and Pakistan. It has led to civil strife and calls for secession in India and Canada.

The Swiss system also has equivalent internal disagreements over this issue, but a conscious effort was made to redesign the system in order to prevent these conflicts from becoming malevolent. One means of how this was achieved was the acceptance of parity between the languages and "giving" equal recognition to the fourth, Rhaeto-Romansch, although it is spoken by only 1% of the population. This action removed one "raison d'être" for potential conflict over the issue that could have lead to instability in the country.

Because the different linguistic and cultural sub-systems of the Swiss system are closely linked with neighbouring states, the country has in the past faced some internal conflicts mostly on
divided loyalty, yet it has survived two World Wars without getting "involved". A sign of the system's continuous redesigning approach to conflict resolution is the creation of the Jura canton in 1978. The French-speaking canton was created from the German-speaking Berne canton after a national plebiscite favoured its creation and following a long and sustained (sometime violent) campaign by the French-speaking people of the canton, against their continued existence as a minority within the predominantly German-speaking Berne canton. There is currently a similar campaign going on for the removal of South Jura from Berne to be merged with the main Jura canton.

(b) Religious Differences

Although a Christian country, Switzerland is broadly divided on the same denominational lines that separates many Western European countries, ie. Catholic and Protestant. This religious divide is compounded in the Swiss system by geographical and linguistic factors whereby the rural areas tend to be mostly French, Italian and Catholic while the cities tend to be dominated by Protestants and Germans. There are 23 cantons in the country with the Protestants dominant in 15 cantons and the Catholics dominant in 8 cantons.

There were several religious wars between the cantons until the 17th century. In 1712, after another religious war, a commission was set up with the stated objective of settling religious conflicts. The action taken led to major reductions in the conflicts between the communities, but did not resolve the core relevant issues which were power-sharing and religious accommodation. For example, in the 1847 Parliament, the Liberals
and Radicals, mostly Protestants and representing 80% of the population, had only 12 votes, plus 2 half-votes in the 22 vote Parliament while the Catholics representing 20% of the population held the balance of 9 votes (which represents a disproportionate share of power and influence in terms of their population).

The Catholic cantons also formed alliances between themselves and neighbouring Catholic states, primarily the Austro-Hungarian Empire, to preserve the "status quo". This alliance was called Sonderbund and threatened to break the state system until the break was forestalled however by the declaration of war in 1847 on the Sonderbund by the Liberals. As winners, the Liberal and Radical coalition introduced a new constitution in 1848 in which the state system was redesigned structurally. The basic features of this 1848 constitution are still valid and in use today although it was again revised in 1874 when the use of referenda was introduced for the Federal system.

Fahrni[1984] commented that after the military defeat of the Catholic/Conservatives in 1848, the winners (ie. the Protestant Liberal/Radical/Democrats), introduced a referendum at the national level which eventually "led to guaranteed concessions to the Conservatives and to the Catholics' integration into the Swiss Federal state". The major concessions of interest here included those of cantonal sovereignty and self-determination on several key issues and the introduction of a bicameral parliament.
thus evolving a situation in which the second council, the Council of State was composed of equal representatives from all cantons irrespective of size or population. This had the effect of giving the smaller cantons a leverage in decision making.

The introduction of the new constitution led to new coalitions of the politicians, cutting across religious divides, thereby relegating the role of religion in party politics. Although religious differences are still a reality in the system, the conscious redesign of the system's structural relationships, effected by the constitution and manifested in the power-sharing formula to be examined later, has ensured that this issue has ceased to be a major source of conflict in the Swiss system. It should be acknowledged that religious differences "per se" are not necessarily the singular causes of conflicts. They are, however in many instances, significant contributory factors as for example, in the Lebanon and in Northern Ireland.

(c) Industrial Relations

The Swiss industrial sub-system could be described as an integrated sub-system. Integration is used in the sense that employers and employees have deliberately reconciled their values and jointly designed a new structural and general relationship whereby conflicts are regarded as mutual problems for joint solution seeking and the parties are regarded as partners. This state of affairs was evolved after the last major industrial dispute (which was nearly nationwide) in 1918. The "winners" (i.e. the coalition between the Federal government and the employers), defeated the unions but recognised and accepted most of their grievances.
In the "Economic Articles" of the Swiss Federal Constitution, the government is now obliged by law to plan and carry out their economic policies with the organisations of employees and employers. Sigg [op cit] asserted that "associations and trade unions are even more firmly integrated into political life than are the political parties", because these associations' rights and duties, as well as obligations, are clearly spelt out in the constitution, while those of the political parties are only discussed in broad terms. A process of systems redesign of Swiss industrial sub-system started which culminated in the 1937 signing of a peace treaty between the largest trade-union organisation and the largest employer organisation. This stipulated among other things, "no strike" and "no lockout" clauses and an agreement that all future disputes should be referred to and settled by an arbitration body whose decision would be final if the two parties failed to reach a solution by themselves.

(d) Power Sharing

The political factor in a state system is the pivot around which other factors revolve. This is primarily due to the fact that this factor in a legitimate system is the custodian of the power
of the state. It is responsible for the allocation, or sharing, of power or authority and the corresponding responsibilities. The perceived allocation and utilisation of power in complex systems are thus potential causes of conflict. They could lead to instability and the eventual disintegration of the system if some significant minority of the state system perceives the power sharing as unfair and thus illegitimate (see Section 4.2).

Because of the complexity of the structural composition of the Swiss system, the issue of power sharing is also complex. There are about 14 political parties, as at Dec. 1986, and these tend to be organised around issues at cantonal rather than at National level. To prevent potentially damaging conflicts from developing over power-sharing, the political system was designed to distribute power among the people by taking into consideration, the complexities and peculiarities of the overall system.

This has created a unique situation. The country is probably the only one in the world without a Head of State or "de jure" individual leader. It is a deliberately designed system with leadership vested in a council rather than in an individual leader and the Council is made up of seven members drawn from the four largest political parties.

The parliament operates through a bicameral structure, on a part-time basis, with both houses sitting at the same time in different chambers. Legislation has to be passed by both houses before it becomes law. Most elections are based on proportional representation thus ensuring that the smaller parties get into Parliament with some reasonable support from the electorate: the majority election system does however operate in some cantons.
The two chambers of parliament are the Council of States, which represents the cantons and half-cantons, and the National Council, which directly represents the people. These two chambers meet once a year to elect the government, its President and Vice-President. Executive power, however, lies with the Federal Council which is elected by Parliament on a 4-yearly basis with the President of the Confederation as Chairman of the Council. The Federal Counsellors, including the Chairman, are all heads of government departments (ministries) and are all equal in status.

The conscious move towards this political system of voluntary power-sharing began in 1953 when the party in power, the Social Democratic Party, began a 6-year voluntary withdrawal from power/government which culminated in the introduction in 1959 of a new form of representation that was designed to ensure the maximum participation and collaboration of the majority of the people and the support of the major political parties. This redesigned form of representation (popularly known as the magic formula) was implemented in 1959. Fahrni (op cit), commenting on this redesigned system, concluded that the new system has ensured that since 1959 "...80% of voters have been consistently represented in the government". The Federal counsellors, irrespective of their political parties, must also reflect the country's geographical, linguistic, cultural and religious
diversity, eg. two counsellors could not come from the same canton, there must be at least 2 counsellors from the minorities, etc.

The redesigned system ensures, through this act of balancing, that counsellors represent the country rather than their individual political and other affiliations. It has reduced potentially damaging conflicts about power-sharing because issues or problems are viewed holistically as the country's problems.

(e) Commentary on Switzerland Case Study

The example of the Switzerland state system supports the argument for continuous systems redesign. It is not claimed that the Swiss system has no conflicts within itself or that it is a permanently stable state. It is presented as a dynamically stable system that has continuously redesigned itself to accommodate issues that could have caused instability. That conflicts have not been totally eliminated in the system is evident from events in Switzerland, e.g. student demonstrations, agitations and violence accompanying the creation of Jura canton.

The concept of redesign has, however reduced potentially damaging conflicts in the systems because at various conflicts conclusions, the winners negotiated "away" some of their gains in order to achieve stability. At various Y-points of conflicts in the state system, the religious "winners" of 1848, the industrial "winners" of 1917, and the political "winners" of 1953, negotiated with the "losers" each time for jointly acceptable situations. They jointly evolved acceptable and
stable solutions for the perceived joint problems and so far none of the parties has tried to renege on these agreements or to repudiate them.

These resolutions of conflict have not only checked a temporary instability but fostered a more permanent stability with the positive consequence that the internal solidarity of the system has been enhanced and its legitimacy generally and willingly accepted.

4.8.2 European Economic Community (EEC) case study

Within the first half of this century, Europe has been engulfed in two costly and destructive wars. The origins of these wars lay in earlier conflicts that had not been acceptably resolved. At the end of the second world war however, negotiations began for redesigning the relationships between some of the European countries to prevent the development of future malevolent conflicts of such magnitude. The negotiations between these countries led in 1951, to the creation of the European Coal and Steel Community (ECSC) whose aim, according to Budd [1985], was primarily "....to lock together the Coal and Steel resources of Western Europe in such a way that these nation states could never again go to war against each other".
The six countries which evolved this approach and structure were France, Germany, Italy and the Benelux countries of Belgium, Luxemburg and the Netherlands. It is reasonable to conclude that the treaty which was primarily aimed at France and Germany, led to the creation of the Common Market (EEC) in 1957 with the signing of the Treaty of Rome. The aim was to link the other parts of their economies together in the way that the ECSC had done for coal and steel. The European Atomic Energy Community was also created in the same year. All the treaties creating these structures were signed by the six members, but in 1973 three new members were admitted while in 1981 another one member joined and finally in 1986 the membership became twelve.

The aims of the Community were explained in the preamble to the ECSC treaty as "to substitute for age-old rivalries the merging of essential interests; to create, by establishing an economic community, the basis for a broader and deeper community among peoples long divided by bloody conflicts; and to lay the foundations for institutions which will give direction to a destiny henceforward shared". To achieve these aims, and administer the organs earlier mentioned, four structures were designed namely the Commission, the Parliament, the Council of Ministers and the Court of Justice.

Budd[op cit] further argued that the two World Wars were caused "...not only by real economic pressures but by...the the failure of traditional diplomacy", among other reasons. I submit that regardless of internal disagreements within the community, the "newly" redesigned European system has brought relative stability to the continent and further assert that the relative dependency of the community members on each other politically, economically
and, in most cases, militarily, has significantly reduced the probability of malevolent conflicts between them.

The redesigned system, the community, has thus brought together the "winners" and "losers" of the wars and redefined the issues of conflict as common problems for joint solutions. The role of the community could therefore be reasonably described as that of an integration system. The integrating functions are carried out through the earlier mentioned structures of Court of Justice, Commission, Parliament and the Council of Ministers. Solutions are sought on aspects of community life from these sources. Again all is not perfect, but it is nevertheless a great improvement on the past.

4.9 Case Study on Conflict Dissolution

The mining industry in the UK was involved in a year long strike between 6th March, 1984 and 5th March, 1985. The conflict contained all the variables discussed in Chapter 2 and ended without a clear resolution. In common with most conflicts in complex systems, it is impracticable to identify and model all the causes of the situation, but any objective and close study of the conflict will reveal the interplay between the different factors that effectively determined the scope, duration and
outcome of the conflict. The analysis of some of these factors have yielded some patterns from which empirical deductions could be made. These could be tested on or applied to other conflict situations with the aim of deriving better understanding of the prosecution of conflict. The ultimate aim is to evolve some practical mechanism that could and would assist systems in preventing such malevolent conflicts from developing or in the event of any such development, to minimise its effect and facilitate the resolution process.

4.9.1 Background to the Miners' Conflict

(a) General relationships

Rosenbaum[1977], asserted that "the management of mines in the UK(as different from that of the USA) is a political affair". I accept the validity of this statement in the sense that the political sub-system of the state system is the prime mover in its role as the controller and regulator of other subsystems, such as the economic, industrial, military and social subsystems of the country system.

This regulatory role of the state is, in the sense of Ashby[1963] and Beer[1967], based on the concept of regulation and control which involves the direct and indirect regulation or manipulation of the other subsystems which might be achieved through intervention, legislation or as a consequence of actions, or inactions in other subsystems. The dependency of other subsystems on the political sub-system is however a two-way process as the other subsystems confer legitimacy on the political subsystem and this determine its composition and
direction. These relationships thus constitute a loop, with the interactions and interrelationships dynamically dictating each sub-systems pace and the course of events as pointed out in 4.8.

In Fig.2.9, I used a modified version of the influencing diagram of Easton[1965] to depict this process in a general form while in Fig.2.10, I presented in a specific form how the miners' conflict developed over time in relation to the three subsystems identified in that chapter as particularly relevant to the conflict, viz, the economic, social and political subsystems.

Fig.2.10 could be extended to incorporate subsequent developments and issues that have been made relevant, as well as other new events in the escalatory trend that culminated in the eventual dissolution of the conflict. However, for the purpose of this case study, such an enlargement is deemed unnecessary (because the required level of detail is outside the scope of this research programme). The three subsystems used for the analysis were initially determined on the basis of the viewpoints of the main parties to the conflict.

(b) **Key parties to the miners' conflict**

The key conflicting parties were:
(i) National Coal Board (NCB) and
(ii) National Union of Mineworkers (NUM) members who were
against the NCB (later referred to in this study as
NUM-LOY, while those who oppose NUM policy and
continued working are called NUM-DIS)

Other main parties were:

a) The Government;
b) Trades Union Congress (TUC);
c) Advisory Conciliation and Arbitration Service (ACAS);
d) British Association of Colliery Managers (BACM);
e) Electrical, Electronic, Telecommunication and Plumbers
   Union (EETPU);
f) National Association of Colliery Overmen, Deputies and
   Shotfirers (NACODS);
g) Labour Party;
h) Police;
i) Judiciary; and
j) Press/Media

The actions and inactions of these parties, coupled with the
factors listed in 2.3 and used below, eventually determined the
course, duration and eventual outcome of this conflict to a
significant degree.

4.9.2 Perceptions

There had been several earlier conflict situations between some
of the parties, in particular between the NCB and the NUM as well
as the NUM and the Government, with the last major conflict
contributing to the downfall of the Conservative Government of 1974. Although in the course of interactions since then, there has been potential conflict situations between the NCB and the NUM, the conflict management approaches adopted by the management had evolved an interacting relationship that could be depicted as shown in fig 4.4.

Fig.4.4 depicts the interactions between the NCB and the NUM prior to the conflict; it also depicts the NUM system as perceived by the NCB before and immediately at the start of the conflict. In this model, the NUM is regarded as the sole representative of the mineworkers and thus solely interacts with the NCB on the members interests. At the onset of the conflict, this perception changed because of an intra-system conflict in the NUM system, when some subsystems of the NUM system refused to support the conflict against the NCB, thus by implication becoming in conflict with the other subsystems.

The NCB's perception of the NUM changed as a result of this intra-system conflict, thus leading to a new interaction diagram which, according to the NCB, should be (as I have interpreted it) as shown later in Fig.4.5(a). NUM however, preferred the use of Fig.4.4 to continue serving as the basis for interactions: it also perceived the NCB as surrogates of the Government and argued that the conflict was between the Union and the Government rather than between the NUM and NCB. This perception of the NUM-
MINING INTERACTION MODEL

Fig. 4.4 Mining interaction system. (Denoting NCB–NUM interactions only before overt conflict using PFM notation. Ref. Bowen, K.C. 1981)
LOY is shown later in Fig. 4.6(b).

(a) NCB's Perceptions

The NCB's perceptions and subsequent actions during the conflict were based on the following premises:

that the NUM is weakened by intra-party conflict,
that the conflict is on economic rather than social issues, and
that the NUM has split "de facto" into two factions with one faction in conflict with it while the other is not.

These observations led the NCB to articulate the following points of view:

i) The NCB should negotiate with the two factions of the NUM rather than with the national leaders (decision subsystem) of the union alone who now represent only one faction.

ii) The NCB (rather than the Government) is the main party in conflict with the mineworkers.

iii) The conflict is an economic conflict between employees and employer; hence no social or political issues should be introduced (this view was later modified).

iv) Other main parties are "neutral" in the course of the conflict.

v) The Government is outside the main negotiation subsystem, although part of the subsidiary negotiating sub-system.
These views and some of the other perceptions of the NCB on the negotiations with the NUM are shown in Fig. 4.5(a).

Fig. 4.5(a) NCB's perception of negotiation system (Using PFM notation, ref Bowen op cit)

It could be seen from these figures that there were differences between the parties on the role of the government and on the role of the NUM-NCB. Some of these differences about the role of wage levels of the parties and even the type of conflict (economic or social or political) led to a re-appraisal of the parties' strategies and stance on the conflict and of the view of the role...
The NUM decision sub-system’s perceptions were formed on the basis that the mines are all state-owned and, "ipso facto", the mineworkers are ultimately employees of the state: therefore the conflict is between the miners and the Government which is acting through its agencies like the NCB and, eventually, through the Police and the Judiciary. The Union is also of the opinion that despite the intra-party conflict within the NUM, the negotiations system should be as depicted in Fig.4.5(b) rather than as shown in Fig.4.5(a). The NUM’s perceptions could be summarised as follows:

(i) The conflict was between the Union and the Government.
(ii) The conflict was economic in its manifestation, social in its effects and political in its origin.
(iii) Negotiations should be carried out with the NUM alone despite the intra-party conflict in the union,
(iv) Most Government agencies are, in one form or the other, involved.

These and other views of the NUM about the negotiation system is depicted in fig.4.5(b)

It could be seen from these figures that there were differences between the parties on the role of the government and on the role of the NUM-DIS. Some of these differences about the role of some of the parties and even the type of conflict(economic or social or political) led to a re-appraisal of the NCB’S strategies and stance on the conflict and of its view of the role
Primary or main negotiations | Secondary or subsidiary negotiations
---|---
**NUM** | **NCB**
Government | **NUM**
**LOY** | Government | **DIS**

**NEGOTIATION SPACE**

Fig. 4.5(b) NUM's perception of negotiation system. (Using PFM notation ref. Bowen op cit)
of the wider system that incorporates the other key parties. This new perception of the NCB is represented in Fig. 4.6(a).

The views of the NCB as reflected in fig. 4.6(a) reinforces the Board's earlier stance and while acknowledging that it is in purposeful communication with the government, it maintains that, by and large, the government, like the other key parties, is neutral. The NUM perception of the roles of the key parties is however very much different from this and is depicted in fig. 4.6(b).

A comparison of figs. 4.6(a) and (b) will show some of the differences in the perceptions of the main parties (i.e., the NCB and the NUM) with the major difference being on the role of the government. The government's stated views were in essence similar to the NCB but include the following additional views on the conflict:

a) The police, as the principal government organ for the prevention of crime and for law enforcement, were "neutral" during the conflict and doing their duty rather than supporting the NCB.

b) The government had a duty to all the parties in the conflict but, because the conflict was an economic one between employee and employer, the government is above such conflicts and has no role to play.

NCB's perceptions (and also the government's) appear to be
NCB's perception of the NUM system

NCB's perceived conflict system

NCB's perceived wider system and role

Fig. 4.6(a) NCB's perception of key parties. (Using PFM notation ref. Bowen op cit)
NUM's perception of conflict system

NUM's perceived wider system role

Fig. 4.6(b) NUM's perception of key parties roles. (Using PFM notation ref. Bowen op cit)
initially predicated and formed on the basis of Fig. 2.7 in Chapter 2, which narrowed the relevant issues to economic ones. The NUM's arguments were formulated and articulated on the basis of Fig. 2.8 of the same chapter, which presents the conflict as an econo-social-cum-political situation. The "rightness" or otherwise of the arguments have no identifiable bearing on the eventual outcome of the conflict. The NCB's stance on the model to be used was modified during the course of the conflict when NCB offered, belatedly, to help relocate redundant mineworkers and assist in financing alternative industries in run-down areas as well as helping to carry out retraining schemes for redundant workers.

4.9.3 Factors Affecting Conflict Prosecution

Cook and Selford [1982] identified two broad categories under which real-life multi-dimensional situations could be studied and analysed; these classifications are as follows:

a) quantitative or quantifiable and
b) qualitative or non-quantifiable.

(a) Quantitative Factors

i) expected future savings if the conflict is prevented from escalation;

ii) economic impact on main parties if the conflict situation continues; and

iii) scale and effect of the conflict.
Qualitative Factors

i) client solidarity;

ii) political and top management support;

iii) wider system support and its impact on the conflict;

iv) impact of the conflict on the wider system; and

v) impact of the conflict on the parties.

Other more general factors are the likelihood of:

a) success by main parties to the conflict; and

b) implementation of the results (including the ability to enforce agreements).

These factors are broadly similar in outline to the factors enumerated in Chapter 2 Section 3 as influencing the development, intensity, scope, duration, and levels of conflict. They are included in the following analysis of the miners' conflict with the aim of drawing some general conclusions from the situation.
Analysis of Factors

(i) Client (Coalition) Solidarity

This factor is extremely important for the "successful" prosecution of conflicts and its presence in the NCB coalition (coupled with its absence in the NUM coalition) could be said to have contributed to the eventual outcome of the conflict. Dissensions within the NCB were muted: those who disagreed with the Board's views were not allowed to form any significant group before being forced to retire or being reposted to less damaging positions, e.g., Ned Smith, the Industrial Relations Director of the Board and Geoffrey Kirk, the Press Officer.

The remaining members of the Board were united in purpose thus retaining their solidarity for the prosecution of the conflict. The NCB coalition (of the Board, Government and sections of the press) was also intact and cohesive in the presentation of their views.

The NUM was involved in an intra-party conflict in which a significant section of its members were actively working against the Union's interest in order to undermine the effectiveness of the Union against the NCB coalition. The NUM coalition (of the union, and its supporters e.g. TUC, Labour Party) were equally involved in various intra-party conflicts and could not present a credible coalition in support of the NUM's cause. It could be seen from these short description of events that the negotiating position of the NCB was significantly strengthened by the factor
of coalition solidarity. The NCB correctly gauged the situation and exploited it. The NUM's negotiating strength was remarkably weak; however, it still perceived itself as fully representing the interest of all the mine-workers.

The effect of the lack of solidarity of the NUM coalition could be estimated in part by the level of coal output from the NUM-DIS, bearing in mind that any output from this sub-system strengthened the NCB and weakened the NUM. It should also be noted that intra-party solidarity was already lacking in the NUM system before the overt conflict situation. This was manifested in the action by the NUM-DIS sub-system of withholding the usual financial contributions to the NUM headquarters. The fact that some NUM-DIS leaders like Roy Lynk and Ray Chadburn were defeated by Arthur Scargill in the election for Presidency of the Union may have contributed to this state of affairs. In short, the position of the NCB remained reasonably solid before and during the conflict. The NUM system's position prior to and during the conflict changed as shown by figs.4.7(a) and (b).

(ii) Levels of Support from other Main Parties

The key parties to the conflict, earlier identified, formed formal and informal coalitions with the two main parties and gave support in various forms and to varying degrees to the parties. This support ranged from refusal to criticise and condemn certain
Fig. 4.7(a) NUM system with intra-party solidarity. (Prior to industrial dispute)

Fig. 4.7(b) NUM system with intra-party conflict. (During industrial dispute)
actions, to open declaration of support and commitment of financial and other resources.

(a) The NCB's level of support

The NCB had maintained that it formed no coalition against the NUM and that the key parties were "neutral" in the conflict. This stance was contradicted by publications, articles and books like "The Miners' Strike" by Geoffrey Goodman[1985] as well as by reports from The Aston University Broadcasting Research Unit, The National Council for Civil Liberties and the Strathclyde University Media Research Unit. All these suggested that, of the ten key parties earlier listed, five were positively supportive of the NCB either by their actions or by their inactions. The five are the Government, BACM, NACODS, EETPU and the overwhelming majority of the media. Further, the Government was revealed as having agreed to "bankroll" the NCB in the prosecution of the conflict by guaranteeing to underwrite all NCB expenses and losses.

The government also agreed to a high pay claim by the Rail-workers to reduce the likelihood of their claiming a legitimate reason for supporting the NUM. Another relevant fact was that David Hart, an adviser to the Prime Minister, was one of the key organisers and fund raisers for the "Working Miners' Committee" whose sole aim was to support the working miners and undermine the NUM.

In effect, the NCB had the "power" of the state behind it with all that this implied. e.g. legislation on the number of
demonstrators, refusal of funeral grants by the DHSS to striking miners, increase in the deduction from Social Security payments to strikers from £15.00 to £16.00. State powers also included the police: on one occasion [20/8/84], one thousand officers were deployed to escort one miner to work at the Cascoigne Wood drift mine.

The government also bought and stockpiled in Europe more than 20 million tonnes of coal to help NCB supply their customers. Finally parties, such as those units of the media which were supportive of the government, transferred this loyalty to the NCB. In the light of the foregoing, it would be difficult to conclude that the NCB had no coalition with the level of support remaining consistently high throughout the duration of the conflict.

(b) The NUM's level of support

The NUM's perception of the role of the key parties has been diagramatically presented in fig.4.6(b). It shows that the police, the NCB, the media and the government, as well as the judiciary, are regarded as forming a coalition. The NUM had hoped that the TUC, BACM, NACODS and the Labour party would be in coalition with it.

In the various reports referred to earlier, only two of the ten
parties were adjudged to have been supportive of the NUM, namely the TUC and the Labour Party. Due to intra-party conflicts within these systems themselves however, support was inadequate. The Labour Party had internal ideological conflicts while the TUC had leadership problems and lacked enthusiasm for the conflict. Only ACAS was unanimously agreed upon by all the reports and parties involved to have been neutral in the conflict.

The role of the two remaining parties, i.e. the Police and the Judiciary, have been the subject of prolonged controversy and debate. There is no generally accepted conclusion but one outcome is clear: their "neutrality" has been called into question as never before. I will briefly examine these subsystems in relation to the conflict in order to draw out some general points on conflict prosecution and role conflict.

(c) The Role of the Police and Judiciary

The police and the judiciary are constitutionally required to be neutral in conflict situations, but in reality, the nature of their duties makes neutrality an ideal. In this particular conflict, the police’s duty was to enforce the "Law of the Land" as passed by the government [which in the NUM's perception was an active party to the conflict]. The police are expected to obey lawful orders or face disciplinary action; they are required by law to enforce legislation regardless of their personal preferences and, through their senior officers, are responsible to "any" duly elected government of the day.
Because the NUM perceived the government to be a party to the conflict, and also because of the constitutional relationships between the police and the government, the "neutrality" of the police was inevitably "stretched". Further, reconciliation of the concept of neutrality with reality on duty is very difficult.

Again, the judiciary is constitutionally required to interpret the laws passed by Parliament. It would be wrong to conclude that the judiciary is subject to the whims of any government of the day. It should, however be noted that between 1979 and 1984 (when the strike began), no less than eight legislative changes were made by Parliament (in effect, by the government) in industrial relations laws, and all these new laws had to be interpreted by the judiciary. The role of the judiciary during the conflict was naturally seen as antagonistic by the miners. Their strength of feeling against both the police and the judiciary was emphasised by their opposition to laws passed by earlier Labour Governments. "The Law" was the Government of the day, the Government was the "enemy" and through these perceptions, democratic principles were endangered.

(iii) Impact of Conflict on Wider System

(a) Customers

The effect of the conflict on the customers, i.e. the consumers of
energy, could be said to be irritating rather than damaging. This minimal effect was due to the stockpiling of coal in Europe by Government/NCB. The production of coal by the DIS sub-system, and adequate supply of alternative sources of energy (e.g., nuclear power from home and from France, oil from the North sea) was used to supply customers and most of the customers thus tended to maintain an attitude of support for the NCB and by implication, of disagreement with the NUM.

(b) Community

Reports suggested that the conflict created deep splits within the usually close mining communities. Relations between the police and mining communities reached a very low and hostile level: in some cases, it is still low, two and a half years after the overt conflict phase ended. Some families that became divided over the conflict are still divided.

Many miners were openly contemptuous of the judiciary. Even some members of the bar have openly protested and criticised both the police and the judiciary over the handling of several cases against the miners. Most of the miners charged with public order offences have been discharged by the courts but there still exists some residual bitterness against the authorities. Many businesses collapsed and some communities even broke up due to the lack of patronage and amicable relationship within the communities.

(c) The Economy

The actual cost of the conflict to the country has not been
officially released although the government gave an initial figure of £ 4.1 billion, later revised upward to £ 5 billion, as an interim figure. Some city analysts [e.g. Simon and Coates on 1/1/85] declared this figures to be unreliable and much too conservative. They calculated the minimum cost of prosecuting the conflict to be £ 85 million per day and rising. Other city sources calculated the cost to be between eight and twelve billion pounds sterling overall.

The diversion of funds from other sectors of the economy to finance the conflict decreased government backing for some industries, increased job losses and produced lower standards of living.

(iv) Public Opinion: Support from the Wider System

The opinion and support of the wider system varied at different phases of the conflict; initially and up till the very late phase of the conflict, much of public opinion was directed against the NUM. The press gave the union what has since been generally agreed as negative coverage, and concentrated on the violence perpetrated by NUM members without any corresponding coverage on violence directed against NUM members.

Since the issues at stake were not intelligently presented to the public, public opinion was "formed" by the media through
inaccurate reports, half-truths and slanted coverage of events, from angles favourable to the NCB according to some of the reports earlier cited. Towards the end of the conflict however, five different public opinion polls showed a decisive shift of support from the NCB to the miners. The popularity of the Prime Minister dropped in three consecutive opinion polls as a direct consequence of the conflict.

(v) Resources, Determination and Capacity of Parties for Conflict

The resources that a party/coalition could commit to a conflict is the sum of its resources excluding those required for other uses, plus those made available by its supporters.

The determination of the two main parties and their capacity for conflict were undoubted. However, the combination of the various factors earlier discussed tilted the odds heavily in favour of the NCB. The NCB coalition’s immense resources were consistently deployed throughout the conflict while the NUM coalition’s potential resources were not; one example of the latter involved the Dockworkers’ Union which initially supported the NUM and refused to handle imported coal, but later withdrew this support because of a court injunction. Overall, the split in the NUM, and only lip-service support from the TUC and its constituent unions steadily eroded the NUM’s potential resources for maintaining the conflict.
In this chapter, I have argued the case for systems redesign. I have also reviewed various approaches for dealing with conflict and concluded that management and dissolution phases are temporary phases during which resolution could be sought and the system redesigned for future stability.

I have examined three case studies of different systems namely Switzerland, EEC and the NCB/NUM. One common element between these systems is that at one time or another in their past, they had been involved in malevolent conflicts. In two of the systems, the structural relationships and interactions were consciously redesigned to prevent or forestall, where possible, the development of future malevolent conflicts and to minimise its effect if one should develop. In the other system however, the system was not redesigned and a "winner takes all" approach was adopted thus leaving room for renewed malevolent conflicts when the "loser" has acquired enough resources to restart the conflict.

In the first two systems, the "winners" adopted an approach that has translated conflict situations into problems for joint solutions in the de Reuck[1985] sense, and thus have devised mechanisms that would prevent malevolent conflicts. This process of resolving conflicts is an appropriate approach for all complex
systems; it offers reasonably "stable" and acceptable solutions to the parties which, if robust enough, will "hold" even if conditions change.

In the Swiss example, the "winners" of the civil war "gave in" to most of the demands of the "losers" except for secession and since then, the system has not been involved in another conflict over the same issue. Potential conflicts on autonomy have been resolved by the system without any party resorting to the threat of secession, eg Jura Canton was created in 1979 after a national referendum supported its creation. The EEC is also a successful system in spite of considerable potential conflict issues. It has prevented the development of malevolent conflicts in West and Central Europe, although this has probably been assisted by other organisations like NATO and WEU. Systems can therefore succeed in the prevention, or minimisation, of the effect of malevolent conflicts if they are consciously designed to achieve this.

The miners' conflict however, unlike the other two case studies, was not imaginatively resolved and the NCB coalition(wonners) has, in my opinion, missed at least one significant Y-point or plateaux where a new and more stable relationship could have been jointly designed and implemented as in the Swiss example. A structure or mechanism that could be used to incorporate the processes, underlying such a successful redesigned system, into other interacting complex systems is outlined in the next chapter.
CHAPTER 5

INTEGRATION SYSTEM AND Y-DIAGRAMS

Introduction

This chapter presents the arguments for the concepts of Integration systems and Y-diagrams. It explains the thinking behind these concepts, their structures and the principles of their design and creation. The chapter also examines the criticism that has been levelled against the Integration System concept and presents arguments in response to these criticism. The arguments in this chapter call for a new approach to the handling of conflict in complex systems. It advocates the adoption of an Integration System approach where stability could be consciously designed into a system and sub-optimal but stable solutions could be incorporated into system interaction at the design phase.

Definition of key terms

Interaction system: this defines an inter-relationship between autonomous interacting systems, covering all aspects of interaction as a definable entity or system.

Interacting systems: the individual or autonomous systems with defined boundaries of identity that become units of some defined
interaction system.

Integration system: a system that is evolved by an interaction system to improve its internal relationship and interactions, and, particularly, to aid in the prevention or minimisation of damaging conflict. It operates on a continuous basis and could be formally defined as a problem-solving framework for seeking stability in complex conflictual situations.

Negotiation system: a system used by interacting systems to deal with conflict situations, as they arise, on an ad-hoc basis.

Wider system: interacting systems in the environment of a defined interaction system, whose actions or inactions have important influence on events and outcome in the interaction system.

Sub-systems: definable parts of an interacting system with specific functions.

Coalition: a group of interacting systems acting in concert, i.e. with defined or broadly agreed (or understood) common goals/objectives, against some other coalition or individual system.

Note: The recursive nature of systems implies that the difference between some of these definitions are questions of relationship and scale rather than those of structure.
5.1 Conceptual Background

It was asserted earlier (Chapter 3 Section 4) that most research on conflict in complex systems carried out in the field of Operational Research have been directed at seeking means for conflict management and sometimes for conflict resolution. It was also noted that complex systems are inherently conflictual by virtue of their dynamism, multiple relationships and multivariate interactions. I contended however, that in most systems, conflict could reasonably be prevented from becoming malevolent or its negative effects minimised.

This contention is based on the fact that systems relationships and interactions can almost always be redesigned; even "normal" relationships can be deliberately and periodically reviewed and redesigned to retain "normalcy". Kast and Rosenweig[1970] quoted Katz and Kahn[1966] as saying that "social structures are essentially contrived systems. They...are imperfect systems..... are anchored in the attitudes, perceptions, beliefs, motivations, habits, and expectations of human beings". They themselves argued further that, unlike mechanical or biological systems, social systems "....have structure, but the structure of events rather than of physical components ...(and).... can be established for an infinite variety of objectives".

It is therefore logical to conclude that these systems are guidedly evolved or consciously designed structures for relationships and interactions. Using this evolution paradigm,
interactions could be said to have developed to the "status quo" from past structural relationships and linkages shaped by force, history, passive collaboration and interrelationships between the parties without any clear acceptance of roles by the parties. The consciously designed approach implies that interactions are developed on artificially constructed parameters which could be "shaped" by the force of an external system, the force of an internal party or mutually designed by the internal parties.

I discussed in Chapter 2 Section 3 the differences between intra-system and inter-system relationships; it is pertinent to note that potentially damaging conflicts are more likely to develop in inter-system relationships through a lack of "ownership", of the larger interaction system. Externally imposed or internally imposed ownership might not be acceptable to all parties in the interaction system and this lack of legitimacy will eventually lead to instability. Stability in these systems is based on legitimacy and acceptance which are better derived from mutually agreed or designed relationships.

Due to the recursive and hierarchical nature of systems most of the features in inter-system relationships are similar to those in intra-system relationships, with only differences of ownership, magnitude and levels of recursion between them. These features are also replicated at various levels of systems interaction and relationship. It is these features that must be
studied, with the aim of eliciting from the available data, the means and methods of preventing or minimising the effects of potentially damaging conflict situations.

This aim and the views underlying it are consistent with the views of Ackoff[1974] who observed that society(social systems) "....responds more rapidly to disruptions(overt conflicts) than it does to the crises(situations and ecology) that produce them". These views are also consistent with those of Bowen[1968] who was critical of the fact that "....many studies of defence start from the hypothesis that it is necessary to win....There has been little effort ..... to describe how such wars come about, what stages nations pass through in coming to war, and what could have been done at the earliest or at some intermediate stage to prevent the later stages occurring". He concluded that "it is important to know whether we can indeed identify the early stages and be prepared to act accordingly".

What Ackoff and Bowen are calling for is an end to the reactive approach to conflicts in systems and the adoption of preventive approaches in systems relationships. Their criticisms could be removed by systems redesign where the structural and general relationship between the parties in an interaction system are deliberately redesigned to include integration mechanisms that will strive to preserve viability and stability regardless of environmental pressures.

The argument for systems redesign raises the question of the designer; this is an issue that needs to be resolved because the eventual stability and viability of an interaction system, is, to a significant extent, dependent on the acceptance of the
structural relationship by the parties and the ability of the system to adapt to changing circumstances. The perceptions of the parties about the structures are inevitably formed on the basis of the designer's legitimacy. Systems structures and relationships develop from three design sources of varying degrees of legitimacy:

(a) externally imposed,
(b) internally imposed and
(c) internally evolved.

5.2 Structures

(a) **Externally imposed structure**

This is the imposition of an externally designed structure on a conflictual system by a wider system with the ability to enforce the structure. The design might be in the form of a "formula for peace" or a restructuring of the systems relationship, but a characteristic of this approach is that it inevitably always has to be supported by a package of sanctions against non-complying parties.

If the external intervention has been agreed to by all the parties in a conflict, then this approach could lead to stability but if not, the reluctant parties might redirect part of their
negative actions against the external parties. The legitimacy of the wider system is an important factor that will be considered by the parties before any decision to accept this type of structure is made (although they may not have any such option).

The structure is most effective under two circumstances, namely when the design is fully acceptable to all the parties or when the external system has the resources to enforce the design unilaterally and indefinitely.

Examples of this mode of systems relationship design are courts' judgements, compulsory and binding arbitration, etc. It should be noted that the structure does not always lead to stability, but is useful only as a temporary phase during which the parties are encouraged to evolve their own structure. The use of the structure will determine whether it is a purposeful or a purposive design.

A design is purposive if the interests of the wider system is given a higher priority, over the interests of the conflicting interaction system, in the considerations for the imposition of the externally designed structure. It is purposeful if the interest of the interaction system is give a higher priority over the interests of the wider system or of any sub-system of this.

It should be noted however, that most externally imposed structures tend to be purposive rather than purposeful. It could be argued that the continued partition of Germany is an example of an externally imposed structure of the purposive nature serving the interests of the external or wider system rather than the interests of the Germans themselves even though the external
parties are divided among themselves.

(b) Internally imposed structure.

This is a situation where the "winner" of a conflict situation, or the "stronger" party in an interaction system, imposes on the system its ideas and design of how the relationships should be and compels the "loser" or the "weaker" party to adopt and operate the structure. The maintenance of this structure is however dependent on the continued supremacy of the "winner" or stronger party, since the structure is implicitly unacceptable to the "loser" or weaker party.

The design is inherently purposive as it represents the "winner"s interests and not the interests of the interaction system. It is also inherently unstable as it does not resolve the conflict but forces it to a covert existence. It could, however, be used to serve as an interim phase during which the "winner" and the "loser" might jointly evolve an acceptable structure.

Current developments in the British Coal(formerly NCB) and NUM interaction system(Section.4.9) are further proof that this approach should serve only as a temporary rather than permanent phase. On the 21st of September 1987, the NUM began a new overtime ban after a large majority of its members voted against the NCB-designed and imposed new disciplinary code.
(c) **Internally evolved structure**

This implies a joint evolution of designs and structures by the "winners" and "losers", the "strong" and the "weak", to resolve a defined conflict, and jointly seek means of preventing similar conflict situations, through the transformation of conflict issues into problems for joint solutions. The structure is consistent with the framework suggested by Galtung[op cit] who called for the establishment of "institutionalised conflict resolution mechanism"(discussed in 3.4.2).

The approach is also in line with the views of Likert[1961] who advocates the adoption in organisations of structures with "...overlapping-group form of organisation where integration of approach implies a submergence of parts in the whole and is inherently purposive and purposeful." Most internally evolved structures represent in principle the interaction system's purpose, but at the same time may have well-defined purposes of their own.

This structure appears to be the most acceptable design to parties and also considered to be the most legitimate. It should be noted that the stimulus for the structure might be external, but if the designers are the interacting parties themselves, the chances of the system being stable are greater than if it had been externally designed and imposed. Examples of internally evolved structures are the EEC, and the Swiss system.
A proposed structure for achieving internally evolved stability is discussed in the following sections. The structure is called an integration system. Two aspects are discussed namely methodological integration and a structure for an integration system. Designers and users might evolve other structures, but the one outlined here depicts the basic components and guidelines required to design such an integration system.

5.3 Integration System (I.S.) Paradigm

Bowen[1970] argued that "The only positive and very difficult way(to examine conflicts) is to endeavour to understand why this behaviour(conflict behaviour) occurs and to seek ways of removing the conditions which encourage it". Ackoff[1974] also called for an "interactive approach to planning and design" arguing that plans and design should aim "... to prevent, not merely to exploit, opportunities ....... try to induce co-operative changes in ... systems ... that are ... fundamental". He concluded that "...no aspect of a system is precluded from change....a system's structure, functions, organisation and personnel as well as its allocation and use of resources"

An Integration System is a structure that attempts to achieve the objectives expressed through these opinions. It is an internally evolved structure with a prerequisite that all the parties in an
interaction system participate in its design and implementation. Although I.S. is primarily a structural design process, its underlying principles of seeking robust solutions from various sources and its deliberate generation of several options and alternative lines of action are also applicable to the choice of methodologies to be used for many project studies.

The I.S. paradigm is partly influenced by the "gestalt" idea of systems. Gestalt is defined by Gould and Kolb [1964] as "...an organised entity or whole in which the parts, though distinguishable, are interdependent, they have certain characteristics belonging to none of the parts. The gestalt thus constitutes a unit segregated from its surroundings."

In the methodological section, I will outline how multiple methodologies could be used in the various phases of a conflict project, with the purpose of obtaining improved quality of information at the various phases rather than a total reliance on the use of single methodologies for every phase of a project from beginning to end. The structural section discusses role definition, relationships and communication links in an integration system.

The roles of an I.S. will vary from system to system depending on the phase of interaction when it is introduced into the system. In "normal" relationships, it will assist the parties in improving communications by the reduction of distortion and "noise", it will also assist in the reduction and possible elimination of incompatible goal-states between the systems through discussions, meetings, exchanges, etc.
It is not implied that an I.S. could remove all the differences between systems or that genuine differences could be communicated away through an I.S. However, if the structure is introduced into a system at an appropriate decision point (Y-point), even if there is an identifiable "winner" or "stronger" party (who might be acceptable or unacceptable to the "loser" or weaker party), the structure will serve as an arbiter and help in redesigning a new structural and general relationship that would be more broadly acceptable to all the parties and thus promote stability.

The role of an I.S. will include:

(a) Ownership;

(b) Regulation; and

(c) Communication

(a) Ownership

An I.S. will perform the role of the "owner" of an interaction system in any inter-system conflict. The concept of ownership in inter and intra-system relationships has been discussed in Section 4.6., and it is obvious from the discussions that inter-
system disagreements or conflicts are more likely to develop and escalate than intra-system situations due to the lack of ownership of inter-system situations. An I.S. fulfils this role and enables the interests of the system to take priority over the interests of the parties in the system.

This role will facilitate the reconciliation of incompatible goal-states of the parties and minimise the development of damaging conflict situations.

(b) Regulation

The regulatory role of an I.S. could be examined from two perspectives, first as a maintenance structure and secondly as an adaptive mechanism. In the first role, the I.S is a form of "soft" homeostat that strives to prevent conflict and preserve the equilibrium or stability of the system. In the second role however, the I.S. attempts to resolve a defined conflict and restore stability to the system in order to restore a disrupted system back to a steady state or dynamic equilibrium.

The first objective is partly achieved by the mere existence of the I.S. itself, while the second goal is achieved through the functions of the I.S.(i.e. its role). Weinberg and Weinberg[1979] explained the structure-regulation law in relation to stability as follows "...stability is made possible by the process of regulation; regulation is made possible by the existence of stability". Regulation and stability could occur at most Y-points rather than at peaks or beginnings of conflict situations.
An I.S. could regulate systems at Y-point, mostly because the points, though not of fixed or discrete nature, are discernible points on a continuum, characterised in system interactions by actions or inactions, gestures, expressions, indications and other modes of communication that might be understandable to the other parties that a tactical or strategic decision point has been reached which might escalate or de-escalate the conflict.

(c) Communication

The I.S. will perform the role of a facilitator between the interacting parties through the provision of communication avenues that will keep the parties adequately informed about each other. This is not to suggest that all differences could be resolved through communications, but it does mean that there will be less distortion of facts between the parties.

5.4 An Approach to Methodological Integration

In Section 3.4, nine methodologies were reviewed and, in Section 3.5, it was argued that an integrated approach to the choice of
methodologies might be more appropriate to the study and analysis of conflict. This suggestion is based on the observation that most methodologies are more applicable to certain phases of study and analysis than in all the phases to which they are individually applied in current studies. Phases like problem identification and structuring, analysis, testing, design and implementation may be better studied by using different methodologies.

I concluded Section 3.5 by arguing that what is required in the field of conflict study is not necessarily a new methodology or new techniques, but a paradigm that will assist analysts in the choice of relevant and available methodologies for appropriate phases of a situation under study. These would range from preventive methodologies to resolution methodologies.

It is noted that attempts are being made to integrate some soft OR methodologies and enhance their effectiveness, but I am not aware of any other effort to integrate these methodologies in the way outlined here. Notable among these other attempts at integration are the works of Bennett and Huxham[1984] on enhancing the hypergame methodology with the cognitive mapping approach, Bryant[1983] on similar notions, Bennett[1984a] on linking various approaches to decision-making and the works of Fraser and Hipel[1984] on game-theoretic based approaches.

5.4.1 Methodological Choice

The aim of the approach to methodological integration discussed here is to enable an analyst build up a "repertoire" of methodologies in a well-classified order so that only the most
appropriate methodology for a phase is used. The choice of particular methodologies for use are not only dependent on their availability but also on the following factors:-

(a) professional/educational background of analyst;

(b) role of analyst;

(c) client; and

(d) objectives of study and analysis (raison d'être).

(a) Professional/Educational Background of Analyst

The professional and educational background of an analyst is an important factor in the choice of approaches to be adopted and tools to be used in conducting a study or an analysis. This is because the analyst's professional world-view has been formed through this environment. The tools he chooses to use for problem-solving have been determined in this context and he would tend to use familiar approaches for even new problems. This would already, in many cases, have had the effect of limiting his range of choice, perhaps seriously; for example, in the field of OR, the dichotomy between the two schools of thought into "hard" and "soft" approaches has meant that analysts subscribing to one
approach might have little or no knowledge of other equally valid methodologies available in the other "school of thought".

(b) **Role of Analyst**

The role of an analyst is another important factor in the choice of methodology and this role, in the present context, could be one (or, rarely, more than one) of four identifiable roles:

(i) analyst as a "neutral" observer;

(ii) analyst as an adviser to one party in a conflict;

(iii) analyst as an adviser to the system in conflict; and

(iv) analyst as an adviser to the wider system.

Although there may be some overlap between roles, in particular, (iii) and (iv), roles are generally implicitly incompatible with each other. The methodologies preferred by the analyst will have to be commensurate with the role he is called to perform.

(i) **Analyst as a "Neutral" Observer**

An analyst in this category could choose and utilise any mix of methodologies that best suits the reasons for the study and analysis. These reasons might be of research, scholarly interest, general interest, and fun, etc. The role allows the analyst to develop scenarios on experimental basis with the main constraints being the analyst’s professional limitations and availability of resources.

The result of the analyst’s study could be widely disseminated to all the parties in the conflict situation through reports, publications and lectures, etc. The aim of the analyst would be
to gain a better understanding of such situations, evolve generally applicable statements to explain such situations and their possible evolutions. Preventive, managing and resolving methodologies would all be used in such studies. The testing of any implementation of ideas, however, can only be carried out in other roles.

(ii) Analyst as an Adviser to One Party in a Conflict

This role dictates that an analyst seeks and utilise methodologies that will yield optimal solutions for the client. These solutions might not, however, be stable in the long run. Most analyses carried out in this role are aimed at obtaining "winning" strategies or options. An alternative aim of analysts in this role could be the minimisation of losses to the party or coalition to which the analyst acts as adviser.

Most game-theoretic based approaches are best utilised in this role but emphasis would be laid on managing methodologies and optimal-seeking rather than stable-seeking solutions. An ethical point raised by this role is whether an analyst should inform, or draw the client's attention to the possible long-term instability inherent in some "solutions" derived from this strategy. The final decision should, however, be left to the analyst.
(iii) **Analyst as an adviser to the system in conflict**

An analyst in this role will require resolving, preventive, and managing methodologies for the study, but with the main aim directed at prevention and resolution in order to achieve stability in the system. The choice of methodology in this role is therefore dictated by the search for stable rather than optimal solutions. Ideally, some attention should be given to the wider system, but this is not the primary task from the clients' point of view.

(iv) **Analyst as an Adviser to Wider System**

The task by an analyst in this role is similar to that of the analyst in the last role. However, now, the methodologies chosen must enable the analyst to consider the impacts and implications of the situation's continuation, resolution or management on the wider system.

(c) **Client**

The client is another important factor in the choice of methodologies for use in conflict study and analysis, because he is the main beneficiary of the study and analysis and may be paying a lot for it. The client could be co-operative or unco-operative with the analyst, and the brief of an analyst would differ in accordance with the client's aims and objectives. There is always the possibility of conflict even within a conflict.
If the client is a party or coalition in a system, its preferred option might be an optimal solution, the best possible outcome for itself, rather than the best outcome for the interaction system. On the other hand, if the interaction system is the client, the preferred option would be on stability which could imply sub-optimal solutions.

The importance of the client is further stressed because most analyses are carried out from their viewpoints, with their inherent prejudice, perceptions, assumptions and preconceptions, which if incorporated into the data for analysis would yield distorted information. It is inevitable that these personal views are used for analysis, because it is nearly impossible for opposing parties in a conflict situation to have all the required information about each other, and these views serve to fill the gaps in order to develop a fairly representative model. The analyst has a duty, perhaps, to ensure that his client is aware of this, by demonstrating the sensitivity of solutions to any data uncertainty.

(d) Objectives of Study and Analysis

The "raison d'être" for the study and analysis is another key
factor in the choice of methodologies by an analyst. If the study and analysis are for research and increase in knowledge about conflict, the choice and use of methodologies is virtually unlimited. If the study is aimed at determining the costs and benefits of the prosecution of a conflict [expressed in financial, social or political terms], the choice of methodologies may be biased towards the use of quantitative ones. If the objective is to redesign the system however, for a more viable and stable structure, the choice of methodologies would of necessity include qualitative approaches.

5.4.2 Conflict Study/Project Phases

Evaluated on the basis of these four criteria, this research has largely been carried out in the role of a "neutral" observer with the intention of advising the system or the wider system. It has also included a short period of "testing" in an actual conflict situation (Appendix B). The ultimate aim is to seek a better understanding of conflicts through an integrated use of different methodologies for the various phases of a defined conflict situation.

Fig 5.1 depicts the logical relationship between some of the methodologies, and the various phases of conflict study at which they may be most appropriate. The phases in a conflict project study are represented in the diagram as follows:

(a) Current situation determination/project initiation phase
(b) Problem identification and structuring phase
Fig. 5.1 Logic flowchart of a simple methodological integration in a conflict study.
(c) Situation analysis phase
(d) Integration systems design phase
(e) Scenario testing phase
(f) Integration system implementation and change-over phase
(g) Post-implementation study, review and operational phase

There is considerable overlap between some of these phases but they individually possess characteristics and features that distinguishes them.

(a) **Current Situation Determination/Project Initiation Phase**

This phase introduces the analyst to the interaction system and is concerned with the determination of the current level or scale of interaction between the system. This could be achieved by initially using a scale like the Harris[1974] conflict classification scale as shown in Fig.1.6.

The scale could then be transferred to and examined on a structure like the Y-diagram for monitoring the trend of events and prediction of next Y-points; ie determining in outline, possible escalatory points and possible stable plateaux where meaningful intervention could take place.
(b) **Problem Identification and Structuring Phase**

This is the phase where a representative model of the interaction system is developed by the analyst for study and analysis. Methodologies like CATWOE could be used to capture the various "weltanschauungen" of the different interacting parties in the system in order to clarify the differences in their perceptions.

Methodologies like PFM or Cognitive Mapping of Eden, Jones and Sims[1983] could then be used to structure the relationships between these sub-systems to detect any structural or general incompatibility. Relativistic models are more appropriate for use in this phase than isomorphic or homomorphic models.

(c) **Situation Analysis Phase**

Detailed analysis of the current and possible future situations are carried out in this phase, with the objectives of determining the immediate and the remote causes of the current situation, in order to identify the extraneous factors that are likely to influence the development of the situation as well as identifying the likely effects of and reactions to certain lines of action.

Several methodologies could be used in this phase among which are the game-theoretic-based approaches (previously discussed in Section 3.4.8), Strategic Choice of Friend and Hickling[1987], which has developed from earlier studies such as Friend and Jessop[1969], and Decision Conferencing of Phillip[1987]. The output from this phase will be the development of different scenarios to represent possible alternative futures for the
(d) **Integration System Design Phase**

This is the phase where the conceptualised scenarios are developed and their relationships (general and structural) designed. This structuring of the relationships and interactions is the design process. In the words of Kenneth Boulding ".....intentions are fairly easy to perceive, but frequently do not come about and are not fulfilled. Design is hard to perceive, it is design and not intention that creates the future".

The definition of the systems relationship, its levels of interaction and communication links between the systems are also carried out in this phase with the consequence that several models might be designed. These inputs eventually determine the structural stability of the designed systems which ideally should be purposive and purposeful.

Kast and Rosenweig[1970] defined the concept of equifinality as the notion that ".....final results may be achieved with different initial conditions and different ways". This implies that variations of input might still yield the same stability in systems. It is my view that this definition may be more applicable to mechanical systems than to social systems. This is
because the black box approach appears to be unrealistic when applied to social systems.

The structure and stability of social systems are determined by, and dependent on, their inputs which in turn are determined by their structure in a continuous loop. Weinberg and Weinberg [op cit] concluded that the resolution of the conflict between the structural and input approaches to systems study and design, is the understanding that ".....structure is defined in terms of input, .....conversely, input can be defined in terms of structure".

(e) **Scenario Testing Phase**

The various models designed in the last phase are tested in this phase against two system modelling criteria of completeness and stability. The completeness testing is to ensure that all relevant actors, perceptions and issues up to the present, have been included in the models during the analysis and design phases. If the testing phase proves that the model is complete, the model is subjected to the second test, but if negative due to changes in any of the factors over time, the study is looped back to the problem identification and structuring phase.

After the completeness criterion is satisfied, the test of stability is carried out on the models to ensure their robustness. A final choice of the model to be implemented is made in this phase and methodologies like robustness analysis (earlier discussed in Section 3.4.6), and system dynamics of Forrester [1964, 1972] could be used. There is also a loop back to
the situation analysis phase if the stability test on the models prove negative.

(f) Integration System Implementation and Changeover Phase

If the chosen model is accepted by the client, this is the phase where the model will be implemented and integrated into the existing structure. Methodologies like PSP and Ackoff's ideas could be utilised in this phase. The key process in this phase is the formal change of procedures in handling relationships, as this is the phase where the I.S. becomes a permanent part of the interaction system and takes over the roles assigned to it.

(g) Post-implementation Study, Review, and Operational Phase

Due to the dynamic nature of conflict in complex systems, continuous re-appraisal of the various phases is necessary on the basis of new actions, information and initiatives. A continuous review of the implemented integration system is very important in order to keep it reflecting the interaction system's views.

The selection and suggestion of the use for these methodologies is entirely an explanatory exercise that should be regarded as a guide to how such methodologies could be used in conjunction with each other rather than as a prescriptive paradigm on which methodologies should be used with each other.
An analyst would be free to choose the methodologies considered to be most appropriate to the phases in the study, as most of the approaches overlap. All the phases occur in most system design projects although studies can be terminated at any of the phases if further study is considered to be unnecessary, for example, at the situation analysis phase it might be discovered that the status-quo is the most appropriate structure.

5.5 The Principles of I.S. Design

The concept of an I.S., although not a prescriptive paradigm or methodology, allows the use of various approaches from diverse fields of study in singular or combined mode, both in the design of an I.S and in its activity. It is a purpose-built form of what is defined by Phillips[1984] as a Decision Support System, i.e "...any system that helps the manager to form preferences, make judgements and take decisions". The I.S., ideally, is also a form of expert system, although the expertise is still held by the individuals that it contains. Bowen[1985] defined an expert system as "...a model of the expertise of a person or of a group of persons, whose knowledge can be sensibly integrated over a particular range of expertise".

It is necessary that the parties in an interaction system be actively involved in the design and all other aspects of the system. This would ensure that the structure is designed "with" the parties and not "for" them. It is also necessary that all
the essential elements (issues) that constitute the interaction space of a system, rather than those of the conflict space, be examined and analysed during the design of an I.S.

The I.S concept recognises that an interaction space is not neatly divided into small boxes of actions and inactions but contains many overlapping sub-systems, in which disagreements in one aspect of interaction could contribute to the development of conflict in another (e.g., religious, economic, social and political sub-systems may be linked in this way).

This ideas were taken into consideration during the study carried out on the Ladworth Project (Appendix B). The study was not primarily on any conflict situation but was carried out to assist the members of the Management Committee in the evolution and adoption of common parameters for the Project. It also helped to bring to the "open", the reservations of several members and thus assist in the ensuing clarification of motives and opinions, reassurances on objectives and commitment and a renewed committal of resources to the Project by these members.

On the project, the use of multiple methodologies was followed. In the final report, some aspects of Checkland's SSM were used to elicit the perceptions of the parties while a simplified form of Bowen's PFM was also utilised to structure the relationships between the parties in the project as well as to structure the
project itself. The data collected through these two methodologies were used to formulate questions for, and generate discussions with the parties through interviews, notes, meetings, etc and the answers from these sources were used to evolve a new structure for the system. It was necessarily a limited exercise, but it did show, at least, that an analyst could intervene in a system of this type, follow the principles laid down in these arguments and assist in the resolution of potential conflict situations to the satisfaction of the parties involved. The parties expressed their appreciation of the structured arguments and proposals.

5.5.1 Structure of an Integration System (I.S)

(a) Objectives

The objective of this section is to determine common parameters in interaction systems for situation evaluation. An integration system should be composed of legitimate representatives of interacting parties in a system with the aim of evolving strategies and tactics for the reduction and possible elimination of incompatible goal-states in the system.

An I.S structure is not a compromise-seeking system, because compromise solutions are not inherently stable as both parties are expected to give up some demands in order to gain some concessions from each other. It is not a consensus seeking approach either (except in certain situations explained later); solutions could also become unstable because of the adoption of a lowest common denominator strategy, i.e. the solutions that
will disturb the parties least at the present.

The I.S is an internally evolved metasystem that helps to ensure that the objectives of the system are valued by the sub-systems to be greater than the objectives of the individual sub-systems. This is primarily achieved through the formulation of goals by the I.S. for the system that are super-ordinate to those of the sub-systems and which are most appropriate for the viability and stability of the system.

The approach is superior to the compromise or consensus approaches for two reasons. The first is that a compromise solution is a form of honourable conflict dissolution that occurs mostly in stalemate situations. The conflict might erupt in the future as there are no clear or acceptable winners; a party that could muster enough resources to the level where it perceives itself to be able to "win" or achieve a more favourable outcome could most likely restart the conflict at an opportune moment.

A consensus solution is an appeasing approach which might become unacceptable to some of the parties in the future, thus leading to another conflict. It is basically a conflict management method that might not be in the best interest of the system on the long run. It is an operational, sometimes tactical, but not a strategic method for conflict resolution. An exception to this criticism would be when the approach is consciously adopted to
enable an integration system to be designed and a conflict situation to be resolved.

An Integration System is a permanent (rather than an "ad hoc") structure that will include in its repertoire the means of selecting which of these or any other approaches are to be used for any situation and thus embraces the scope of the other approaches.

(b) Features

The following are essential to the design of an Integration System:

1 An integration system should be jointly internally evolved, staffed and operated by all parties in an interaction system. This condition has to be satisfied in order to enhance the legitimacy, acceptance and subsequent effectiveness of the I.S.

2 There should be some equality in the representation of the parties in the I.S. This is necessary because of the "equality" in status between the parties; "equality" is used here in relative terms of defined autonomy, goals, and objectives rather than equality in size or of resources between the parties.

3 An I.S has to be funded by the interaction system, on an agreed basis, rather than by one party in the system. The I.S must have control over the funds it is given; it might also receive funds from "neutral" bodies, given
4 An I.S should be a permanent rather than an ad hoc body in interaction systems. This would ensure continuity and promote understanding and trust between the parties.

5 An I.S should be complemented with a team of professionals from a multidisciplinary background. This would provide objective analysis of qualitative and quantitative data and information to the I.S., as and when required. Probably conflicting data, via individuals in their respective sub-systemic roles, may be processed in this analysis.

6 Mini-integration systems could be designed for various levels by the main I.S. This is necessary because systems relationships vary at different levels of interaction; e.g., in an industrial system, the employees are subordinated to the management, but as a group, i.e., union, the workers' body is on an "equal footing" with the management body. Local disputes may be best resolved at local levels between the parties.

7 An I.S would be responsible for the generation of alternative options to conflict. This will be achieved through research and analysis, that might involve a
cost-benefit type of analysis of short term gains and losses in various circumstances; e.g conflict development, conflict prevention, system redesign and so on. It would also involve the longer-term evaluation of the costs, effects, and impacts of potential conflicts on the system and its wider environment. It would not itself have the function of decision although it would strongly influence courses of action by the parties, jointly or unilaterally.

The suggested objective and the structure to adopt to achieve it, is thus, that of an ideas factory and laboratory, or a "think-tank", where issues affecting an interaction system are raised, discussed and clarified. It can, but need not, agree upon policies, and suggest programmes for implementation. As a communication channel, it would aim to improve and strengthen system relationships through seminars, periodic reports, ad hoc situation reports and research findings.

This would inevitably reduce the risk of distortion and misperceptions, keep the parties adequately informed about each other's "raison d'etre" for certain actions and consequently lead to increased stability. In an industrial context, unions would be kept regularly informed of company performance and its implications for the company's profit and workers income; the management too will be kept informed of union opinions for consideration in company policy formulation. Overall, it would provide a continuously available forum for organised study rather than a series of meetings often stimulated only by perceptions of crisis by one or both parties.
Ideally, an I.S should be staffed by experts from diverse backgrounds, unlike the PSP (Section 3.4.1) which implies that only social scientists should be involved. The methodologies that could be central to an I.S's functions would include those methodologies discussed in Chapter 3 and others such as those referred to in Figure 5.1 and the accompanying text, which any of the analysts might find useful.

It should be noted that most of these methodologies have similarities in their aims, objectives or functions due to their development sources and reasons for development. Approaches like MT/AO and hypergames are very similar because they share a common root (game theory); however, MT/AO has now been developed into an analytic "expert" system in the form of a computerised software package called CONAN. Another computer software called Decisionmaker has also been developed based on the same game-theoretic principle. Some indication of the use of CONAN for exploratory analysis is given in Appendix A.

Methodologies like the VSM and RAM coincide in their final objectives (i.e. the design of stable rather than optimal systems), others like the PFM, PSP and Ackoff's philosophy share common aims in their attempts to detect "real" causes of
situations rather than the "symptoms". Moreover, they are all problem-oriented approaches which evolved from practical applications and are directed at conflict resolution rather than management.

Bowen[1985], after listing Metagame, Hypergames, System Based Interviewing[Moynihan,1987a], Expert Gaming[Moynihan,1987b], SSM, Cognitive Mapping, Strategic Choice and Decision Conferencing among the methodologies that could be used to design Decision Support Systems or Expert Systems, noted that "...the methodologies.... mentioned... all seem to have some role to play, potentially at least in the search for expertise and its expression in explicit, usable form". There could be no better or more fitting comment on the role of these and other methodologies earlier mentioned than this statement by Bowen in regard to their appropriateness as tools in an I.S.

5.5.2 Differences Between an I.S and a Negotiation System.

An I.S is not designed for the purpose of negotiations and should not perform that role as it is normally construed. It is a structure that aims at preventing conflicts and its objectives are both wider than, and different to, those of a Negotiation System(NS). However, a new conception of a NS could be an integral extension of an I.S. The NS is, in general, an ad-hoc coming together of the conflicting parties when a conflict is apparent and some sort of "solution" is sought.

The I.S role also includes keeping competition from developing into conflict and preventing benevolent conflict situations from
evolving to malevolent ones in the sense of Smith and Bowen[1972]'s use of the words.

Another major difference between an I.S. and a N.S. is the relationship between the parties; in an NS the parties' roles are adversarial (ie "we" versus "them") because they represent different sub-systems, and are negotiators on behalf of their respective sub-systems. In the case of an I.S, the parties represent the interaction system and the roles are thus inherently co-operational (ie "ours") by design.

5.5.3 Criticisms of I.S.

The main criticisms which have been or might be levelled against the integration system approach are as follows;

i) It is utopian and unattainable because the likely "winner" in a potential conflict would not willingly shift to a less conflictional stance.

ii) It takes away "the right of management to manage as they deem fit" in an industrial situation.

iii) It would become another bureaucratic appendage to the system.
iv) It could become too powerful and remote from its constituents and thus might become unrepresentative, consequently becoming delegitimized through its acceptance of unpopular measures.

v) It might be abused by any of the parties.

vi) The approach does not recommend to decision makers what to do.

While there might be some validity in these criticisms, I argue on the following pages that the benefits to be derived from this approach by an interaction system are far greater, in terms of viability and stability, than any of its perceived limitations.

I also show, with the support of short case studies, that some of the criticism are unfounded and ill-informed while others could be reasonably overcome through the measures that would be designed into the I.S. There is powerful and convincing evidence to suggest that structures, similar to I.S, have been successfully implemented and are currently operating smoothly in relation to various aspects of system interaction.

5.5.4 Response to Criticisms

(i) Ideal and Utopian

The I.S approach does not aim for the total elimination of all unwelcome conflicts or possible conflict situations. Rather, it is a pragmatic approach that aims to reduce potentially damaging
conflicts, starting with objectives that are non-utopian but achievable.

The Swiss system, the EEC system and to some extent, the industrial systems discussed in the next section are visible examples that such an approach is practical. Conflicts have not been totally eliminated in these systems, but it is pertinent to note that damaging or disruptive conflicts have not been experienced in those areas of interaction where structures similar to the I.S have been implemented. Of course, even with an I.S, perceptions could change, the I.S could fail, and a malevolent conflict could still develop. An important point in the operational effectiveness of the I.S structure is the volition and willingness of the parties to achieve or move towards a state of stability.

(ii) Right to Manage

This criticism is voiced about the application of the I.S approach to industrial/commercial situations. It is argued that such a system would deny the management sub-system its "right to manage as it deems fit". Management is based on legitimacy and acceptance or on delegated authority: it could also be based on coercion, etc. However, a management sub-system that relies solely on "right" will find stability very difficult to achieve for the system. This is why worker incentives and co-operation...
schemes are constantly promoted.

The following industrial-economic case studies illustrate the invalidity of this criticism and reinforces my arguments that the I.S approach enhances rather than removes the "right to manage".

Case 1: Norway

The Norweigan Industrial Systems relationship is broadly governed by an agreement called the Basic Agreement. This was initially signed between the employers' and employees' associations in 1935. The Companies Act of 1973 strengthened this relationship by compelling mining and manufacturing companies to have employees' representatives as part of the decision-making sub-systems. This condition was extended in 1974 to include building and construction companies.

An industrial democracy research project was commissioned in 1962 by the Norwegian Employers Confederation (NAF) and Norwegian Federation of Trade Unions (LO) with the objectives of improving industrial peace and stability. A Co-operation Council was evolved in 1969 to perform roles similar to those of an I.S in the industrial sub-system of the country.

The Co-operation Council is made up of representatives from the LO and the NAF. It has its own secretariat (jointly funded and maintained by the parties) with a manager and professional consultant who carries out research on its behalf and at its behest. These staff are employed on a full time basis and paid by the Council.
Research is continuously carried out by the staff on various aspects of industrial structure and relationship. Courses are regularly conducted on company and industrial matters to familiarise employees with issues that contribute to the formation of industrial or company policies, with major input from the employees.

The I.S structure is replicated at most levels of interactions in the industrial-economic subsystem of the country (i.e., in companies, departments, etc). For example, in companies or departments with more than 400 employees, a Works Council would perform the functions of an I.S; in one case, the Works Council is comprised of 14 representatives, with equal numbers drawn from the management and the workers.

The organs for integration in the Norwegian industrial-economic subsystem thus include the Works Councils, Department Councils, conferences, Concern Councils with protection and environment committees, and, at the pinnacle, the Co-operation Council of LO/NAF. The basic agreement is revised as a rule every four years.

Case 2: Sweden

The structure that performs the I.S functions for the Swedish
The economic-industrial subsystem is called the Labour Market Administration (LMA) and has responsibility for the direction of the industrial policy of the country. This body is administratively responsible to the Swedish Cabinet and the Ministry of Labour.

The LMA is made up of the representatives of the employers' associations and the workers' unions. This structure of representation is replicated at most levels of systems interaction. LMA performs its functions through several agencies but the most important agency for industrial matters is the Labour Market Board (Arbetsmarknadsstyrelsen—AMS), whose directorate is composed of 15 members of which 6 represent the employees, 3, the employers and 6 others who appear to be independent "specialists".

Representatives of the employers and employees are jointly represented on many permanent committees involved in research and counselling as well as on the Boards of Directors at all levels of the LMA. Decisions that affect the industries, economy, or the social life of the workers are jointly discussed, analysed and formulated to ensure wider acceptance at each level of implementation.

Case 3: Japan

The Japanese concept of "nemawashi" is broadly similar in principle to these approaches as it involves intensive prior consultation between the management and workers over policy issues before they are formally initiated. Difficult points or potential conflict issues are resolved and positions accepted by
the parties prior to policy formulation.

These procedures ensure that there will be little or no difference in the stances of the parties, yet these "concessions" by the management to the workers have not removed their "right to manage" because neither profits nor productivity has been shown to fall or negatively affected due to these "concessions".

In all the countries discussed above, the I.S format or structure appears to have contributed significantly to the reduction of econo-industrial conflicts. Due to the significant reduction of obstacles to mutual co-operation (i.e., obstacles like distrust, suspicions based on inadequate information, and hostility), industrial stability is ensured, and the managers' "right to manage" has been voluntarily accepted and their position further enhanced and legitimised.

(iii) Bureaucracy

This criticism is partially valid in that the I.S requires additional independent professional and secretarial back-up separate from the normal organisation structure. However, the benefits of evolving and maintaining this structure should far outweigh the cost. The benefits are derivable from conflict prevention and improved understanding between the parties.
The I.S does not have to be over bureaucratic, as the secretarial back-up could be minimal. For example, the secretarial back-up to the Norwegian I.S earlier described are mostly carried out by part-time employees. Bureaucracy does have some virtues however; as any study of the EEC would show, the cost of maintaining the bureaucracy, despite continuing arguments and differences, is bound to be quantitatively and qualitatively far cheaper than that of prosecuting the sorts of major conflict that have previously bedevilled Europe.

(iv) Remoteness and abuse of power

This is a criticism that could be levelled against any regulatory and control mechanism, e.g. a government cabinet, union leadership, or management team. The situation could be overcome through periodic reviews of representation through elections or votes of confidence in representatives and, of course, through report-back procedures.

In addition to ex-officio members of the I.S (e.g. in an economic situation, the union leaders and the management team), new members should be regularly introduced and rotated. Communication between the I.S mechanism and the constituent parts of the interaction system should be kept very open so that decisions reached on behalf of the parties are acceptable to all the parties.

Delegitimization of representatives could occur if the representatives are perceived not to be adequately representing the views and opinions of the legitimizing authority. However, provided the representatives keep adequately in touch with their
constituents and report back regularly on the issues discussed by the I.S., the consequences of the validity of this criticism would be avoided. The "independent" professional group in the I.S. have an important communication role in this context.

(v) Abuse by one party

Another criticism is that one of the parties might abuse the I.S. by exploiting the other parties or attempt to dominate the structure for its own benefit. This observation might be valid in some circumstances as it is with every system or organisation. In a well planned and jointly evolved I.S., with the defined objective of achieving or striving towards stability, its own procedures would work against this happening.

The joint evolution of an I.S. is predicated on a mutual desire for stability rather than optimality in favour of one party or coalition. It involves the willingness to abandon coalition formation in favour of the whole and finally the acceptance of the mutually evolved design.

Because of the dynamic nature of interactions, it could not be ruled out that a party might want to "bend" the rules if the conditions appear to be favourable. A regular review of the structure, its achievements, raison d'être, consequences if it is abandoned and future objectives would serve to remind the parties...
of the necessity of not abusing the system.

5.6 The Concept of Y-points and Y-diagrams

One permanent feature of a dynamic interaction system is change over a period of time. Most studies on such systems are, in one form or another, directed at coping with these changes or handling such changes in order to minimise their negative impacts. Changes are, however, preceded by the decisions which determine the courses of these changes and decisions too could be preceded by changes in a continuous looping relationship. Decision Theory, or more accurately theories of decision, is concerned with the better understanding of the process of these decisions.

Also in conflictual interaction systems, there would always be a point in time when, due to one or several factors, one or more of the parties in conflict would reach a point of decision-making on whether to de-escalate the situation or to escalate it. Regardless of the reasons for reaching this point, the point is referred to in this study as a Y-point. The diagram used in monitoring the phases of interaction between the parties in a system and the various decision points reached before the current situation is called a Y-diagram (Fig. 2.5).

A Y-point is thus basically a decision point at which parties in an interaction system decide on the actions or inactions in the next defined phase of their relationship (as defined by the party making the decision). Such points are also mentioned earlier (Chapter 2) as potential stability plateaux where meaningful
Dando and Bee[1977], pointed out how important this phase of decision taking is with the aid of game scenarios between players who are relative gain maximizers (RG) and non-relative game maximizers (non-RG's). In a series of games, the non-RG's attempted to modify the RG's behaviour in order to evolve more cooperative games and, when these efforts failed, the non-RG's "...then arrive(d) at a crucial decision point in the game". Such crucial decision points are the Y-points: because the non-RG could decide to change his strategy and play a non-co-operative game or continue to play with the previous strategy. They concluded that "...it should be possible to alter substantially the frequency of the hostile response by providing information about the possible intentions of the RG player".

The function of providing this sort of information is what the I.S is partly designed to achieve. The Y-diagram is one of the facilities that should be available to an analyst during the course of studying an on-going situation, or an interaction system before the development, or during the course of a conflict situation, in order to determine the trend of events. A Y-point could serve as an intervention point where conflict management actions are implemented while a resolution process is initiated. In the miners' conflict, for example, the collapse of the strike should have been seen as providing a period for the redesign of
the NCB-NUM interaction system because that period was clearly a Y-point.

One problem in conflict situations, however, is that a party or coalition might be so convinced of its eventual "victory", or the obviousness of its "victory", that it might be unwilling to grant concessions to the obvious or potential "loser". One of the functions of the Y-diagram in such situations is to assist in the identification of the plateaux where meaningful intervention could be made and an I.S. designed (or redesigned, if it has, in fact, failed earlier) to strive for stability in the system.

5.6.1 Some features of Y-diagrams

A Y-diagram is a schematic representation of the development of an interaction system's relationship over time. It could be constructed by any analyst or other interested party, concerned with the conflict situation. Its main use is to serve as an aid to the analysis of the system's interaction. It depicts pictorially (Fig 2.5) the gradual development of relationships from "normal" to the first potential disagreement point, which could be resolved and thus revert the relationship back to "normal", or which could through the addition of other issues develop into a conflict situation; with further Y-points developing at various levels of conflict.

(i) Y-diagram Construction

The diagrams are basically block diagrams with only two additional symbols for decision points and connector or looping
process. The blocks(squares) are used to represent the key phases of interactions in a symbolic manner. The phases could later be individually studied and analysed when a detailed understanding of phase is required. The symbols used in its construction are as shown in Fig. 5.2

(ii) **Uses of Y-diagram**

Y-diagrams could be used at any phase of system interactions for either:

(a) post-hoc studies; or  
(b) current situation (live) study

(a) **Post-hoc Studies**

In this type of study, the diagram could be used to examine the development of the systems' relationships, thus determining when Y-points were reached, and what happened at those periods. This would enable one to respond to enquiries like:

Were any opportunities seized or missed?  
What were the consequences of the options adopted by the parties? and so on.

The answers to these and other questions posed during the analysis would yield valuable insight into the problem of
situation analysis.

Although there is the benefit of hindsight for the analyst, the exercise should assist the user of the diagram in deriving a better understanding of "similar" conflict situations (noting that similarity may be a very subjective concept).

(b) Current (alive) Situation Study

Y-diagrams could be used to examine "situational norms" or "conflictual". This involves the modelling of an existing relationship so that critical pairs of interactions are essential that even "normal" relationships are potentially re-evaluated and can be compared. If only we keep them "normal".

The diagram could serve as a summary whose function would be to assist analysts or users in the prediction of potential critical decision points ahead in the system. This could then inform sub-system to potential issues or conflict points and provide a diagram or pattern or evidence of the system's relationships, qualitatively better-informed advice could thus be given before the decision points are reached.

Fig. 5.2 Symbols for Y-diagram.

In order to construct Y-diagrams, the analyst must obtain data and information from the potential or eventual users of the results obtained in the analysis and any other relevant sources.
situation analysis.

Although there is the benefit of hindsight for the analyst, the exercise should assist the user of the diagram in deriving a better understanding of "similar" conflict situations (noting that similarity may be a very subjective concept.)

(b) Current (live) Situation Study

Y-diagrams could be used to examine "live" situations ("normal" or conflictual). This involves the modelling of an ongoing relationship up to the current phase of interaction. It is essential that even "normal" relationships are periodically reevaluated and constantly monitored, if only to keep them "normal".

The diagram could serve as a monitoring tool whose function would be to assist analysts or users in the prediction of potential critical decision points ahead in the system. This could alert the decision making sub-system to potential issues over which there could be some later disagreement or, potential conflict points, and also to changes in the pattern or essence of the system's relationships. Qualitatively better-informed advice could thus be given to the decision sub-systems before the Y-points are reached.

(iii) Data and Information Requirements for Y-diagrams

In order to construct Y-diagrams, the analyst must obtain data and information from the potential or eventual user of the results obtained in the analysis and any other relevant sources
about the following:

-the other parties in the interaction system
-the known options available to every party in the system
-the known factors influencing every party in the system
-the sanctions that could prevent parties from adopting certain options
-the credible threats possible and available to the parties.

These details would be collected and collated to evolve an idea about the governing ground-rules for the parties. This information would then be used to chart the development of the relationships and would assist the analyst in determining when a party/coalition could decide to transform a "routine" disagreement into a conflict.

5.6.2 **Determinants and Indicators of Y-points**

Because of the inevitability of change in dynamic systems' interactions, Y-points could develop in any interaction system regardless of the state of relationship (i.e., "normal" or conflictual). The Y-points would vary from one situation to another even in similar systems but the factors determining their emergence could include (but not necessarily limited to) the following:
The actual, or perceived reasons and causes of conflict form one of the factors that contribute to the emergence of Y-points. If the conflict situation was deliberately provoked by one party (or coalition), Y-points in such circumstances would be very different from situations where none of the parties want conflict. If the raised issues are considered to be relevant by all the parties, one or more of the following conditions have to be satisfied before a Y-point could evolve:

(i) depletion of the resources of one party (coalition) or all the parties and the inability to replace them at the same frequency,

(ii) inability of one party (coalition) to have a decisive advantage over the others (stalemate) and

(iii) withdrawal of support by the wider system.

Some of the issues could also be made irrelevant by some of the parties if they are not considered to be the main causes or reasons for the conflict situation. If the causes or reasons for the situation are generally agreed and acknowledged, a Y-point
might be possible if only to allow some action to be taken. For example in the Iran-Iraq conflict, the reasons and causes have not been agreed upon and therefore Y-points for meaningful intervention have not evolved.

(b) Perception of "de facto" "status quo" and Projected Course of Events

The actual state of affairs and likely future states might persuade some parties to try and evolve a Y-point. If one or more of the parties appraise the present and project the appraisals into the future, the consequences of continuing on the same line of action might be considered unacceptable. This might lead to a Y-point where a new future is jointly agreed or designed.

If however, the projected course of events is perceived by some of the parties to be eventually favourable, the Y-point might only be used as an intermediate, stock-taking phase, subject to certain stipulated conditions. Such conflicts could become long-drawn with no clear winner or loser with continuous situations with short or long breaks in the overt phases of the activities. This could continue until some other factors contribute to bring about, facilitate, or force, another Y-point. Two examples of such scenarios are the Arab-Israeli conflict and the Superpowers'
relationship.

(c) Internal Pressure

This is another important factor that could bring a Y-point about. Internal pressure involves pressure from some sub-systems in an interacting system against its own decision-subsystems' decisions, actions, etc. The pressures might have various reasons but the effect is the same: dissension from the system's stance. This contravenes one of the key principles governing the successful prosecution of any conflict — the principle of internal solidarity. This principle implies that a party or coalition in conflict must present a united front against the other party or coalition. It also implies that the issues of the conflict must be supported by the legitimizing authority and supporters (ref. Section 4.9.3)

Internal pressure is extremely important in the emergence of Y-points because decision sub-systems depend on the other various sub-systems in their interacting systems for their legitimacy and for the system itself to remain as a viable entity. If internal pressure calls for a Y-point, the decision sub-system would in most cases heed the call, as otherwise the support for the sub-system could be withdrawn. An example of the importance of this factor was the role of the Peace movement in the USA at the latter part of the USA-Vietnam war.

(d) External Pressure

Y-points could also be achieved as a result of external
pressure. This could occur if the interacting systems are "persuaded" or convinced that it is in their best interest to find a solution to the conflict. This "conviction" or "persuasion" is carried out by the supporters of the parties in the wider system. External pressure could also come from the supporters of the opposing parties. The key to the success of any external pressure is the ability to enforce sanctions that usually accompany such proposals or persuasion.

From whichever way a Y-point is evolved in a conflict situation, its manifestation offers the parties an opportunity to decide on new relationships between themselves, but at a price. The immediate price is that one party has to make a move or shift its position somewhat unless there is an external party to bring them together. The need for reliable predictive models for this phase of interactions could not be over emphasised. However, the dynamic nature of interaction systems, the ease and rapidity with which issues could be classified or reclassified, as well as the obvious fact of incomplete information make this a daunting task. The Y-diagram is a modest move towards such predictive models.
In a conflictual system, the initiative for an I.S. should ideally emerge from the "obvious winner" because of the acceptance factor mentioned in Chapter 3. Although this initiative would initially be regarded as suspicious by the "loser", its adoption and promotion tend to have more chance of success than if it had been imposed by the "winner" or from external sources or even initiated by the "loser". In "normal" interaction systems, the initiative could emanate from any of the interacting parties and even from an "external" source that is acceptable to all the parties in the system (external in the sense that it is not an active party in the defined interaction system). This chapter has examined the concepts of Integration System and Y-points in Y-diagrams and how these concepts could be meaningfully utilised by analysts or other parties in a "normal" or conflict situation. It is clear that the game-theoretic methodologies discussed in 3.4. could play an important role in developing and analysing Y-diagram models.
CHAPTER 6

CONCLUSIONS AND FUTURE RESEARCH

6.1 General Commentary

The Integration System concept is based on the existence or development of good faith between the interacting or conflicting parties. It is also based on the assumption that most of the parties in an interaction system would prefer stability in the system to unnecessary and malevolent conflict situations. In situations where conflict has been deliberately provoked by one party or coalition, for whatever reasons, it is obvious that an I.S would not be of much service except when all the parties involved agree to jointly participate in the I.S. Systems with structures similar to that of the "I.S" have been functioning without the parties attempting to abuse the system.

An I.S does not have the power of decision and its approach is not prescriptive by nature. The structure and the Y-diagram, used together, present a framework that brings to the attention of the decision makers and others, a structured means of determining the current situation, modelling it and deciding on how the next phase of interactions would be influenced.

It is not based on any particular technique for conflict resolution but on a paradigm that would assist parties in conflict situations or "normal" interactions to design and implement a resolution-seeking mechanism into the interaction system. Interaction systems differ in structure, relationships, and ground rules of interactions. The rules and norms that govern the development and prosecution of conflict would also vary from situation to situation and context to context in accordance with the form of interaction "normally" engaged in.
These variations are also reflected in how the conflicts could be settled, but the principles governing the resolution of conflict are reasonably finite and repeatable in modified forms in most situations. Like any other situation in human activity systems, it is difficult to prescribe methodologies for resolving problems that have not yet occurred. In Chapter 5 however, I have discussed some of the facilities and methodologies that are considered appropriate for the various phases of a conflict study.

The contents of this thesis can be summarised under three broad headings of conflict study, conflict development and conflict settlement. Under conflict study, I have examined how conflict situations could be studied using different methodologies and conclude that single methodologies are mostly inadequate to "capture", model and analyse the inherent variety of most conflict situations or even other interaction systems.

This conclusion is consistent with the observations of Schelling[1980] who lamented the narrowness of single methodological approaches to conflict study and commented that he had "...hoped to help establish an interdisciplinary field ... cutting across economics, sociology and political science, even law and philosophy and perhaps anthropology..." This, he hoped, could be useful, "...not only to theorists but also to people concerned with practical problems".

The variety of complex systems could thus be adequately
represented only through the use of multiple methodologies for different phases of the study. As Curle[1975] explained, in conflict studies, "......the stress is on the mutual reaction of people, and groups in conflict situations, and how this may be modified. It is definitely not confined to international conflict but deals equally with industrial, social, racial and other sorts of conflict."

I have adopted the multiple methodology approach to conflict study in the Ladworth Project (Appendix B) and shall in further meetings with the members of the committees continue to use this approach. In conflict development, I have looked at the types of ecology in which conflicts are likely to develop. I have examined relationships between "normal" interaction space and conflict space, and how an increase in one space leads to a corresponding decrease in the other as issues are classified as relevant or irrelevant to an ongoing situation.

The role of perceptions in conflict development was reviewed, as were the factors that interplay to determine the scope, intensity and duration of a conflict situation. I also examined the difference made in systems interaction when system ownership has an overarching authority over the conflicting parties.

The issue of conflict outcomes was extensively discussed on the basis of management, dissolution and resolution. I examined these outcomes in relation to systems stability and argued for the adoption of the one outcome that could lead to stability.
Stability in systems and how it could be achieved is a dominant theme running through the thesis and I suggested a structure that I am convinced could lead to improved stability in systems. I have used several case studies to support my arguments that stability in complex systems is dependent on the structural integration of the sub-systems. In seeking to determine the underlying principles on which such an integration system could be based in design and implementation, based on the case studies, observations and this research, I suggested some essential conditions that are necessary for the design of an integration system.

During the research programme, I evolved two analytical tools to complement the methodologies in use, the first tool is the Y-diagram, which could be used at any phase of interaction, to determine the current situation and plan for the next decision point. The second tool is the Integration System structure which could be used to help in the redesign of the interaction system's relationship and structure. Some of my views have been modified and enriched on certain aspects of conflict through correspondence with de Reuck and Mitchell. Discussions with Checkland and Howard also clarified some of my opinions. The correspondence and interactions between me and the Ladworth Project committee members during my studies for them, and after these were completed, have enabled me to monitor to some extent, how an integration system could be implemented in practice.
6.2 Conclusions

On the basis of the arguments and submissions in this thesis, reinforced and supported by the ideas from other sources acknowledged in the report, my conclusions from this study are thus as follows:

(1) One of the major "obvious" lessons that could be drawn from the arguments of this thesis is the effect of different situation-handling approaches on system relationships. This lesson was demonstrated through the use of case studies, especially those on conflict resolution and the one on conflict dissolution.

(2) Future system relationships are determined by the management of Y-points (decision-points).

(3) The relative stability of an interaction system is dependent on the structural and general relational structure of the system.

(4) Conflict study cannot be adequately carried out using a single discipline approach. A multi-disciplinary approach is essential.

(5) Conflict does not erupt spontaneously. It requires a certain ecology to foster and nurture it.
Conflicts, being properties of dynamic systems cannot be totally prevented or eliminated, but the development of malevolent types can be minimised through design.

Stability has to be consciously designed into a system's structure and not taken for granted.

Only internally evolved structures can ensure stability because externally or internally imposed ones are inherently unstable due to the fact that the "loser" might not accept its conditions and could, at an opportune time, undermine it. Here, I consider the EEC and the Swiss systems to be relatively stable, but not the miners' system.

The concept of an Integration System is an approach that could aid in incorporating stability into interaction systems.

Perceptions are key factors in determining structural relationships and stability.

Despite the possibilities of positive outcomes from benevolent conflict situations, creative resolution of conflicts are extremely rare (e.g., a process for forcing prices down, and yet increasing both parties' share of the market due to affordable prices, versus a price war).

Conflicts are more easily started than resolved (e.g., one party can begin a conflict, but its resolution requires
the co-operation of all the parties that have become involved in the situation).

(13) The "original" conflicting parties have no more say in a conflict situation than do their key, and therefore essential, supporters in the wider system.

(14) Support of the key parties in the wider system, and not the "rightness" or otherwise of the parties is a major determining factor in the duration, scope and probable outcome of conflicts.

(15) Dissolved conflict situations make the interaction system inherently unstable as the miners' case is now proving. The "losers", i.e. NUM-LOY, have now (Sept.1987) imposed an overtime ban on their members in a move that is very similar to the initial overt phase of the last conflict situation which was dissolved.

(16) "Winning" intra-system conflicts poses more problems than "winning" inter-system conflicts. This is because in an intra-system situation, the loyalties, support, resources and effort of a system is divided against itself and, at the end of the conflict, the system is still divided until an I.S. is implemented in
one form or another. For example, the victory of the British Government over Argentina and its stance on EEC issues has brought it more favourable reactions than its coalition's victory over the NUM.

(17) Prescriptive methodologies are impracticable for conflict research.

Future Research

In the light of the commentaries, arguments and these conclusions, further research is required to help determine how an I.S could be incorporated into industrial organisations, into public political life or into international relations without the parties losing their identities.

Further multidisciplinary research is also required to formulate or evolve more detailed paradigms relevant to classes of situations in which conflict may occur. These paradigms, in extension of what is suggested in this thesis would aim to perform the following functions:

a) to help predict;
b) determine;
c) examine; and
d) interpret
likely indicators that would enable analysts or any interested or intervening parties to recognise when meaningful interventions could take place.

Further research is also required on the different types of
structure that would be best suited to different interaction systems. This further research must be action or project-based as it cannot be adequately carried out primarily as a University-based study unless under the aegis of a permanent conflict study unit working in the field. The author of this thesis intends, if possible, to carry out advisory and consultancy studies for organisations in conflict or wishing to avoid one. The work reported here will act as a methodological base for him or others to get appropriate research started.
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The Hadworth project was short, because of its nature which could be described in the words of Ackoff (1972) as "messy". It had most of the factors present in complex conflict situations earlier discussed in the body of the thesis, and, most importantly for my research, the parties were willing to jointly explore a "stable solution" in line with my suggestions.

Involvement with the project could be said to have occurred at one of the stages in the project that has been described as a 't-point' in this thesis. This is because of several factors affecting the project. These factors include (but are not
EXPLANATORY NOTES ON THE LADWORTH PROJECT

Introduction

The thinking behind the concept of I.S could not fully tested in a malevolently conflictual situation but it was felt necessary to test and sharpen the ideas through the observation and involvement in as real a situation as possible. I had some interaction with the Newham Conflict and Change Project (a project set up in the London Borough of Newham to help in the resolution of conflicts in the area.), but there was no suitable project for me to test these ideas on and thus I had to look elsewhere.

The Ladworth project was chosen because of its nature which could be described in the words of Ackoff (1974) as "messy". It has most of the factors present in complex conflict situations earlier discussed in the body of the thesis and, more importantly for my research, the parties were willing to jointly evolve a 'stable solution' in line with our suggestions.

Involvement with the project could be said to have occurred at one of the phases in the project that has been described as a Y-point in this thesis. This is because of several factors affecting the project. These factors include (but are not
limited to) the following:

(i) Uncertainty about future funding.
(ii) Threat of failure due to inadequate local participation.
(iii) Internal pressure to do 'something'.
(iv) Structure of the project.
(v) Unclarified relationship between Ladworth and similar projects in the area.
(vi) Stalemate between factions due to some polarisation of views.

PROCEDURES AND METHODOLOGIES USED IN INTERVENTION

The 'Ladworth' system was treated from the onset as a "soft system" in the Checkland use of the word, and, in line with my arguments in this thesis, it was decided to use any appropriate methodology for the project. Consequently, the SSM approach was used to identify the owners, their perceptions, the expected transformations and their expected benefits.

The Ecology of the Ladworth project was then constructed and studied in line with the producer- and co-producer concept of Ackoff to determine how the individual perceptions were formed, and whether the perceptions were purposive or purposeful in relation to the project. The adequacy of the data and information base used by the parties in the formation of their perceptions and articulation of their views was examined for
accuracy (measured against actual incidents and documents), relevance and content. The result of this examination was used to construct a PFM model.

The PFM’s concept of System ownership was utilised to generate questions on the following aspects of the Project:

i) Structure suitability and relevance.

ii) Similarity/Divergence in Aims and Objectives between Ladworth and individual Organisations.

iii) Involvement and Participation or otherwise of the organisations with Ladworth

iv) Opinions of the parties

v) Basis for perception formulation.

Project Scope

Work for Ladworth covered the areas of Study, Analysis and Design. The study aspect was carried out with conventional modes of data collection and study. i.e Interviewing, Observation and Archival or Records study. These three methods will now be briefly examined to show how they were used to obtain relevant data and information about the project.
Interviewing

Thirty-five organisations were interviewed during the study period over a period of 4 months. These organisations included Statutory Agencies (e.g. Police, Housing, Education, Recreation, District Intermediate Treatment Centres), Voluntary Agencies (e.g. NACRO, Housing Associations, Tenant Associations, Youth Clubs, Cooperatives etc.) and Councillors.

Interviews were conducted at various levels of these organisations, e.g. in the Police, from the P.C on the beat to Divisional Chief Superintendent level in the two Divisions covered by the project. 3 serving councillors and some of the ex-councillors representing the project areas, as well as several council workers, were also interviewed.

The interviews were carried out to elicit information from the people and organisations concerned about their perceptions of the project, its benefits, limitations, achievements, failures, why they are active (or inactive) in the project, and how the project might be improved structurally or functionally.

Observation

I attended 20 meetings of the Steering Committee and other related organisations and projects in Birmingham. These meetings included for example (a) Attendance with the Police,
at an impromptu (for me) Schools anti-crime meeting in Handsworth, (a) Housing Association meetings in Ladywood, (c) Neighbourhood watch meetings, (d) Police-Tenant Association meetings, (e) Resource Allocation meetings, (f) Planning meetings, (g) Project management sub-committee meetings etc.

Records Examination

This involved the examination of various records and documents connected with the formation and management of the project, records on planning, policy, and reports from different organisations and evaluations of the project. Access was given to any documents I required from any of the parties: information gathered from this source, which is not usually available to the members of the project, proved crucial in determining how and where the project deviated from its primary purposes and the probable means of regaining its lost momentum. On the basis of the analysis carried out, it was discovered (and later confirmed by most of the parties concerned) that the structural and functional relationships between the parties were inherently competitive, especially between the Statutory Agencies and to a lesser extent, between the Voluntary Organisations.

It was realised that these 'rivalries' has been carried over to the relationship and management of Ladworth. It was also realised that these influences contributed directly and
indirectly to the impact of Ladworth on the community. These preconceived ideas formed the perceptions of the parties and represent the ecology of the project.

It became apparent that the perceptions have to be modified by the parties themselves if the project is to be successful. I felt that this was possible if the objective of Ladworth could be made to be more important than the sub-objectives of the individual parties. My initial report was circulated to more than 50 member organisations and individuals for their reactions, comments and ideas.

The responses from these sources were analysed and combined with all other information to produce the final report. This final report was also circulated to most of the project members before the Annual General Meeting (AGM) of the project for 1987, for debate at the AGM. The meeting was well attended with about 100 people representing various organisations. I was questioned by more than 20 people on various aspects of the report, and I argued for the adoption of the I.S structure for Ladworth. One of the most remarkable feature of the research has been the transformation of the parties from opponents of the study, to critics and cynics, but later to supporters and active participants when the ideas of the I.S were understood.
The active support of these initial sceptics came about after the realisation that the research could be of assistance to the project and also to their own organisations.

EPILOGUE

The Ladworth report has now been submitted by the Management Committee to the Birmingham City Council for consideration and adoption in the Council's policy formulation on Inner City organisations. Reports suggest that this seems to have taken place.

The ideas of an I.S was very well received by many of the parties involved in the project, ie, from the Councillors, the representatives of the Statutory Agencies and other Organisations. This view is supported by letters and telephone calls of appreciation I have since received from some of the organisations involved with the project.

It is my belief that I have taken part in a successful attempt to transform rivalries, competition, covert conflictual issues, and unclarified assumptions to overtly stated problems for 'open' discussions and the acceptance of these as problems for joint solution.
CONCLUSION

Our aim in the Ladworth study was not to resolve any particular conflict but could be summarised in the words of Angyal, as quoted by Beresford and Dando (1978), "In systems thinking, the task is not to find direct relations between members but to find the superordinate system in which they are connected or to define the positional value of members relative to the superordinate system".

The relevance of the project to my research is best expressed in the words of M'Pherson (1974) as being "an empirical study in the Systems Science sense of using the systems paradigm to study the structure, behaviour, organisation, and other forms of relationship and interactions of the system in conflict in order to obtain evidence for the further development of knowledge concerning the systemic characteristics of conflict". In this sense, it has supported the concept of Integration System, and helped greatly in the logical argument of Chapter 5.

References


LADWORTH PROJECT REPORT

by

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June, 1987
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Foreword by Professor K.C. Bowen

This report, by Mr. Yemi Adegoke, has been discussed with and approved by me. It will necessarily have some incompleteness due to the very short time available for work on a most complex problem. We are grateful to the many members of the committee and others who have spoken freely to us about the problems that face the Ladworth project, and we hope that this outsider view will be helpful in moving to the next stage of furthering its aims.

[Signature]

K.C. Bowen
1. INTRODUCTION

Following some discussions with certain members of the Ladworth Project Steering committee, Professor Bowen and I submitted a proposal to the committee [appendix A] in January 1987 to carry out a study of the project with the stated aims of "... assisting the project committee to clarify and make explicit the purpose of Ladworth and assess the effectiveness of the committee's strategies for carrying out any stated aims" and also to "... attempt to identify and open for debate conflicting issues and come up with suggestions on possible ways of dealing with these".

An interim discussion report was submitted in March [appendix B] and circulated to Committee members, the document was discussed with us at the Committee meeting of April 30, 1987 and the points raised were considered. This final report incorporates the views raised at that and previous meetings and attempts to achieve the aims set out in our proposal document.

This report is in six parts namely
(a) The Background
(b) The Ladworth System
(c) Identifiable problems
(d) Commentary
(e) Conclusions and Recommendations
(f) Appendices.

The report does not pretend to be an How-to-do-it manual nor claim to be a panacea for solving Ladworth's enormous problems, but it aims to serve as a broad guide on how to build on the foundation that has already been laid.

The report is written with the majority of committee members in mind and thus devoid of the various technical expressions or methods and techniques used during the course of the study. Readers who are interested in the complete methodological report should contact me at the University. It is not written to evaluate the performances of any individual or organisation connected with the project but rather as a document to appraise how the project's "corporate approach" to crime prevention/reduction could be improved.
The Ladworth project is a bold and laudable one and any shortcomings implied by this report should be considered in relation to the major fact that there was no model to follow; it was an uncharted path and any mistakes should be regarded as part of the learning process.

2 BACKGROUND

Historical

Ladworth Project was set up in 1985 in the wake of the riots in the City of Birmingham. It was the result of an initiative from the West Midlands (WM) Police and was financially supported by the Inner City Partnership Programme (ICCP).

The aims of the project are defined in a constitution (Appendix D) and a steering committee was constituted to run the affairs of the project. The committee is made up of 35 members and drawn from various interested parties operating in the community, with a conscious strategy of ensuring that the community is adequately represented.

The composition of the committee is based on the three identifiable sub-systems that makes up the Ladworth system: i.e. 7 elected members (councillors) representing the "governors" or policy formulators for the project area; 6 representatives of the statutory agencies directly related to the project, representing the "agents" or policy implementers in the project area; and finally 22 community/voluntary organisations elected at the AGM to represent the "governed" or the "clients" of the various policies.

The idea behind the composition is an attempt to ensure that

(i) decision of the committee is truly representative of what the community wants; and

(ii) all the parties in the Project area could freely discuss the problems and difficulties in the area without any part being left in the dark about issues, e.g. as to why some actions have been or have not been taken.

Most of the funding [75%] is derived from the ICPP and the remainder [25%] is obtained from the W.M. Police. This funding arrangement is agreed for three years after which funding sources become uncertain. The current financial year [87/88] is thus the last year for which there
is any certainty of funding.

Geographical

The project area covers disproportionate parts of 4 adjacent but politically separated areas of the city with a population of 86,000. It covers a large part of Ladywood, a small part of Perry Barr and very small parts of Edgbaston and Small Heath. The area was defined and determined on the basis of the WM Police maps and covers parts of the C1 and C2 subdivisions of the Police.

This criterion in addition to other factors possibly available to the Police, e.g. levels of crime, tension etc. appear to be the raison d'etre for the determination of the project area [Appendix C].

Political

The project started in the aftermath of the last riots; it seemed politically reasonable and popular to do 'something' that might prevent or minimise similar occurrence. The political representation on the committee reflects the geographical/political spread of the project area with councillors on the committee representing the various wards covered by the project area:

- Ladywood - 3 councillors
- Edgbaston, Perry Barr,
- Small Heath and the Police authority - 1 councillor each.

The chairmanship of the committee is permanently vested in the Ladywood ward due to the large coverage of this ward.

3. LADWORTH SYSTEM - STRUCTURE AND ORGANISATION

The main objective of the project is set out in section 2.1 of its constitution [appendix D] and is "... to assist financially, and in an advisory role any activity within the area .... whose aims include the reduction of or the prevention of crime and the consequent improvement of the quality of life in the Project area".

The means of achieving the above objectives are stated in Section 3 of the constitution and include the following:
(a) "make grants and donations to activities in the defined area"
(b) "receive grants and donations and otherwise raise money"
(c) "promote and carry out or assist in promoting and carrying out research, surveys and investigations and publish the useful results thereof"
(d) "employ and pay any person to supervise, organise and carry on the work of the project"
(e) "collect and disseminate information on all matters affecting the said objects and exchange such information with other bodies having similar objects".

In this study, these and the other criteria were used to examine how well the project has performed in view of its stated objectives. The evaluation is intentionally unquantified as such quantification might yield figures which are open to abuse and used to justify certain stances or actions not intended by either the author or the committee.

The management of the project is vested in the Steering Committee which is also empowered to determine and institute the structures to enable it to carry out these responsibilities. Two subcommittees were formed by the Steering Committee to perform these functions; the subcommittees are

(i) the Resource Management Group
and (ii) the Crime Prevention Group.

Sub-committees were also formed at core area level of the crime prevention group to discuss local issues.

The study revealed that of the several means listed in the constitution available to the committee and its organs for realising the stated objectives [5 of which were mentioned earlier], in only one has the committee been successful. However, the efficiency with which the one successful task [that of making grants and donations to activities in the area] has been carried out is negated by the fact that it has been ineffective; the money has been meticulously and carefully disbursed but the impact could be said to be minimal.
This report and two earlier ones by different members of the committee were commissioned by the committee and thus could be said to partially fulfil another one of the tasks but the others have been neglected. This has led to a situation where the project is viewed by virtually all the members and outsiders as a funding agency.

The committee by focussing primarily on giving grants has unwittingly become efficient but ineffective [doing the wrong things correctly]. That the available funds were not originally meant for disbursement could be gauged from the total grant which is very small compared to that available to other organisations/agencies.

The administration of the project is provided by a sole individual [Mr. Keith Wakeman] with no administrative or secretarial backup: he occupies an office in the council building [by courtesy of the Chief Executive].

The Administrator attends the meetings of the committee and the various subcommittees with the only purpose of recording what transpired and getting it prepared for the next meeting. He also sends out details of the meeting.

The Crime Prevention group is run by another individual [Mr. Ted Shuck], whom it should be pointed out is not employed by Ladworth, but whose brief as civilian Projects Officer for the WM Police includes Ladworth. It is Mr. Shuck therefore and the various sub-committees at the core area level (most of whom are not Ladworth committee members) that constitute the Crime Prevention Group.

The Resource Management Group also contains members with voting rights but who are not members of the committee with whom the final responsibilities lie.
4. IDENTIFIABLE PROBLEMS AND CAUSES

There are obviously many problems facing Ladworth, but the most damaging ones [in the sense that its very future existence depends on resolving them] are identified as follows:

(i) inadequate awareness of Ladworth by the community;
(ii) lack of adequate support for the project by even those members of the community who are aware;
(iii) distrust of some of the Project members' objectives by the community;
(iv) perceived ineffectiveness of the Project; and
(v) lack of clarity and uniformity in the perceptions and thereby working frameworks of the committee members.

These problems are closely linked with each other and no single cause could be attributed to any particular problem. Some of the causes are clearly outside the control of the Committee, but should be brought to the members' attention nevertheless. The factors judged to be the cause of the problems are:

(a) size of the Project area;
(b) structure/organisation of the Project;
(c) socio-cultural differences;
(d) resources; and
(e) ambiguity in the role definition and functions of the Project and its Steering Committee.

It is stated in the last paragraph that no single cause or factor could be identified as solely responsible for any particular problem; therefore, bearing this in mind, these problems will be discussed in relation to some factors that might jointly or individually have caused these problems.

Inadequate awareness of Ladworth by community

Many of the community/voluntary organisations in the project area are unaware of Ladworth and, insofar as they become aware, it is seen by them as a funding agency, albeit of small amounts. The role of Ladworth or its objectives are hardly mentioned and thus it is treated as a funding agency of the last resort and not as an organisation.
with other functions, such as advisory and information providing. Consequently, interaction between most of the community/voluntary organisations in the project area has been limited to applications for and allocation of money.

This lack of awareness could be attributed to the lack of adequate publicity on behalf of Ladworth and this in itself could be said to stem from various factors.

Size: the project area is very wide and thus it is difficult to liaise with all the organisations that might be useful to achieve Ladworth's objectives.

Structure/Organisation: there is no identifiable structure to support an awareness campaign and the project has no identifiable point of contact like an office - only recently has one person been committed fully to it.

Resources: there is no available manpower to canvass for support, and members already involved are already sacrificing considerable time without pay (the money available is always disbursed in such a manner that nothing is left for publicity or campaigns).

Other factors could no doubt be added to these to explain the lack of awareness about the project in the community.

Lack of adequate support for the Project by the Community

There were more than 60 community/voluntary organisations and leaders present at the first AGM of the Project at which the Steering Committee was elected but since then their active participation or involvement has diminished dramatically. The situation could be gauged at any meeting of the committee where the number of community voluntary bodies represented are few.

Without delving into the question of whether these community/voluntary organisations are truly representative of the communities or whether their initial interest was kindled because of the likelihood of some grant from Ladworth, it is important to recognise that these organisations at least present an identifiable face and could be regarded as symbolic representatives of the community.

The lack of support for the project by the community could be attributed to factors such as the following.
Size: the size of the project area has effectively made it seem remote to the local community and thus there is no sense of ownership or commitment to the project, as its impact is far removed from their daily experience.

Socio-cultural: the committee was designed in such a way as to give the community/voluntary bodies a greater say than the others through their large majority of members on the committee with voting rights. Control has, by default, passed to the professionals from the statutory agencies and professional community/voluntary body administrators, with the consequence that local people feel ill-equipped to participate fully in such a gathering.

Uncertainty about Ladworth: the community is yet to be convinced about Ladworth's positive role and their part in it; "How relevant to their lives is the project?"; "In what ways can it be of help to them?"; as a funding agency, it has only very small grants to give, therefore, "what else does it do and why is it in the community interest to support it?"

There are other factors as well, e.g. most of the committee members live outside the project area and therefore are not subject to first-hand experience of the situation.

Distrust of some Project members' objectives

This is one of the major problems facing the project because, within the committee itself, there is some distrust of fellow members' organisational motives, ranging from suggestions that some organisations might be using the Project as a kind of Trojan horse infiltrating into the community, to ideas that other organisations might be using it as a Public Relations exercise to enable them to say that something is being done while, in reality, all they do at meetings is to explain why things are not being done.

This distrust is obviously created by experiences and past interactions and also caused by differences in perceptions as well as socio-cultural differences. It is even more pronounced outside the committee, where community/voluntary organisations speak of learning not to trust statutory agencies on any issue until work has been completed and they can see things for themselves.
Perceived Ineffectiveness of the Project

Many members contend that their greatest problem is the conclusion by the community that the project could not make noticeable impact on the situation. This pessimistic view is supported by the fact that the committee has no means of following up the decisions reached to ensure a successful completion of initiatives. The members agree that the project's effectiveness is very limited but point to the factors that contribute to this state of affairs, factors like size and resources - the very limited resources of money, manpower and time against the very large project area. Structure, organisation and ambiguity in role definition also make the effectiveness of the project a hard task, although perception of this generally is rather vague.

Lack of a common framework for reference

It became apparent during the study that Ladworth means different things to the different parties involved. Each party uses its own criteria to determine what is 'best' for the project and to portray its perception to outsiders as to what the project is about. Consequently there are conflicting images of Ladworth in the community (and in the committee). The project is under continual pressure to accommodate and even become what individual members make it out to be. This situation is, in part at least, a consequence of the ambiguity surrounding the role and functions of the project.

5. COMMENTARY

The ideas behind the Ladworth project are strategically and psychologically well conceived; strategically, it could provide a forum for the 'governors'/ 'rulers', their 'agents' and the 'governed'/ 'ruled' to meet in informal surroundings at the local level for discussions about local problems, interests, difficulties etc in areas like crime, housing, waste collection, environment etc. (unemployment was specifically excluded as being too wide a subject), with a view to taking collectively agreed action and thus fostering understanding, trust and co-operation.
Psychologically, people are more likely to cooperate with governments and their agents if they know that they are playing a part in the decision making process or that their views are taken into consideration and their problems properly perceived and regarded. A project like Ladworth is thus like an integrating or problem-solving structure where all the parties in a problem-situation, jointly and on an "equal" basis, attempt to formulate and adopt common and acceptable strategies/approaches for solving the identified problems.

All the parties interviewed during the study [including those parties who are not actively involved] expressed their hope for its survival. Before analysing the problems facing the project, data was obtained from several parties through a series of interviews, attendance at meetings and by observation and inspection of records and documents relating to the project. The data collected was then used to generate and formulate the questions in the interim report which was later used as a discussion document [appendix B] between the committee and ourselves. The following comments are based on the responses given by various parties in the project and those who are not involved with the project but are in the project area; while the conclusions in the next section are derived from the answers given to the questions in the interim document.

Size, Structure and Organisation

The structure of Ladworth at present is a loose collection of interested parties with no developed relationship. Although formed in 1985, there was no person employed specifically to administer it until late 1986, thus for more than one year after its formation, it was administered as one of his other projects by Mr. Ted Shuck, Civilian Projects Officer for the W.M. Police.

The new administrator has no secretarial or organisational backup and uses the city council offices, relying on the services of the council and other organisations. The impression an observer gets is that there is no clear structure to Ladworth: the committee appears to be a super-structure built and operating on an incomplete foundation.
The functions of the Administrator are currently limited to recording minutes of meetings, his role could usefully be expanded if he had some administrative/secretarial backup.

The total dependence of Ladworth on one source of finance means that a stoppage of the grant could lead to the dissolution of the project because of the association of Ladworth, in the minds of community/voluntary bodies, with giving of grants (even without a grant there is much for the committee to do).

It is clear from the amount of the grant and from the early documents dealing with the plans for the project that the money was not primarily meant to be used as grants but to be used to run the project itself i.e. to employ staff, sponsor projects, initiate studies etc and give only small grants to support these. The decision to use most of the available funds as grants to community/voluntary bodies appears to have been due to various reasons:

(i) it was seen as a way to generate community groups' support;
(ii) changes in the original personnel led to the situation where the new personnel lost sight of the main purpose for the money; and
(iii) the idea that, "because it is the people's money", they should be allowed to decide how it should be spent.

Socio-Cultural Difference

The committee has tried to involve local community organisations in its management and operations but the response has been disappointing. One of the reasons for this could be the assertion by some community organisations that "most of the committee members live outside the project area, and are middle-class professional"; in other words, the committee are part of 'them' and not part of 'us', and therefore "they cannot really understand 'us'".

Individual members of the committee are, based on personal interactions, respected and trusted, but this is not carried over to the project. It is the transfer of this personal recognition to Ladworth that has proved elusive. Because of the distrust of other Project members, therefore, the community bodies currently actively involved in furthering the objectives of Ladworth remain very much unrepresentative of the project area.
The Ladworth structure was originally conceived as a strategic and policy directing structure rather than to manage the tactical and operational role it is now playing. The envisaged composition reflects this assertion.

The size of the project area has effectively cut off any kinship that could be felt for the project by community/voluntary organisations and a major realisation is that the current size could not be managed effectively with the current structure. This is all reflected in the proposals made in the Conclusions.

Role Clarification

Despite the defined functions of the committee as stated in Appendix D, there is considerable uncertainty about its role. The major function currently being carried out by the committee is that of reviewing and discussing reports from the two subcommittees [resource management and crime prevention] rather than being the initiator of activities.

One apparent cause of role confusion is that most Committee members are not fully aware of what the committee was designed to do. They tend just to follow the general flow of discussions rather than initiate policy topics for discussion; with the result that individual rather than community problems are being addressed.

The role of the committee has in several instances become operational rather than strategic but without the structure or organisation to carry out operational functions.

Resources

The committee's functions directly or otherwise appear to revolve around the grant received from the ICPP and WM Police, and Project Committee has made no appreciable effort to attract finance from other sources. Time is another resource that has to be carefully managed; one recurrent complaint from the less active members is that meetings seem to go on till late at night over issues which need not take such a long time and are relatively unimportant.
Conclusions and Recommendations

The following conclusions are partly based on the questions raised in the interim document earlier mentioned [appendix B] and discussed with the committee; they are listed under four categories [structure, research, committee & general].

On Structure

1. The present structure is inadequate, ineffective and inefficient.
2. The structure is unrepresentative of the system.
3. The structure of the Committee is not designed to cope with a project of this size and a new management structure is desirable.
4. There are alternative structures which could prove to be more effective and efficient.
5. The size and complexity of the project is such that fully effective management by a single committee is not practicable and there is thus a need for a break-up of the size into local community groups co-ordinated at the Ladworth committee level.

On resources

6. The available resources are obviously inadequate for the purposes for which they are being used; they were not initially intended for these purposes.
7. Most of the past attention and resources [with notable exceptions] has been directed to issues and problems which are peripheral to the project's objectives.
8. There has been no sustained effort to seek and obtain grants from other sources e.g. local business.
On the Committee

9. The committee is uncertain of its role and concerns itself mostly with operational level issues rather than broad policy issues.

10. The potential of the committee is not properly utilised by (i) the committee members because of their uncertainty about what they are supposed to do and (ii) by the community because of the composition of the committee.

11. Despite the grants given to community bodies in the project area, there has been no conscious corporate effort by the committee to increase its impact and influence in the area and thus to be perceived as a focal point for help and support.

12. Some committee members [in particular elected members and statutory agency representatives] regard Ladworth objectives as peripheral to their duties and therefore do not give the project the support and attention it deserves.

13. The purposely informal arrangement of the committee meetings has unfortunately discouraged some statutory agencies, representatives who claim to find the meetings irrelevant to their needs and badly time-managed.

General

14. There is no publicity material about Ladworth.

15. There is no attempt to co-ordinate resources and knowledge within the committee of members with comparable responsibilities.

16. Information flow between the members is erratic and is mostly confined to the monthly meetings, when time is never sufficient.

17. There is no clear policy or planning for bringing influential community leaders [e.g. religious leaders] into the project on an active basis.

18. There is no regular feedback of information or report on activities from the committee to non-represented project members [to sustain their interest and support for the project].

19. There is no formal means of data and information exchange between members to enable them to learn from each other.
20. There is no monitoring of the value, for the aims of the Ladworth project, of the use of resources allocated by the committee [this is an issue of importance as information rather than one of monetary control.]

21. Some organisations and individuals are not actively involved because of [11,12,13,14 and 18].

22. Some organisations/individuals are actively involved for various reasons among which are
   (i) sincere belief in the project;
   (ii) interagency co-operation;
   (iii) part of their duty; and
   (iv) it is better to be 'in' than 'out'.

23. The status quo has proved unsatisfactory and needs to be reviewed/replaced.

24. The project is currently being defined by the action of the committee rather than the influence it can bring to bear in the project area through its organisation.

25. No outsider or non-committee member is suitably informed about Ladworth, and decisions on involvement cannot properly be made.

26. Ladworth means different things to the different parties because their perceptions were formed from their individual viewpoints not from the project's viewpoint.

27. The perceptions of the parties have to be modified for the future progress of the project.

The recommendations fall into the four categories used earlier, namely structure and organisation, role, the committee, and general.

Structure and organisation
(a) A new structure should be set up to replace the current one.
   [A diagrammatic representation of a possible structure is at appendix E].
(b) The project requires an identifiable presence [e.g. the administrator's office needs to be made known to the public].
(c) The relationship between the project members [both committee and non-committee members] requires classification.
(d) The project area should be broken down into smaller units [e.g. 4 or any feasible number of units].
(e) The units should be administered locally with the local representatives of the agencies, the local councillors and the community/voluntary bodies.

(f) Honorary secretaries should be elected to liaise between the local units and the administrator.

(g) The administrator should act as the co-ordinator between the local units and the main project committee.

(h) There should be some administrative/secretarial backup for the project.

(i) The committee would be better named as the "Management Committee".

NOTE: It has been stated by some individuals that too complex a "sub-committee" structure is undesirable. The Appendix E structure is as simple as possible in order to meet the seen needs (see Role of the Committee). Its formality need not be bureaucratic provided that essential links and communications are ensured. In this sense, it could be seen as an informal rather than a formal extension of the existing Ladworth Steering Committee.

Role of the Committee

The committee's purposes, in addition to those roles currently stated in the constitution, should explicitly include and place emphasis on the following:

a) to stimulate community initiatives, e.g. by sponsoring events like campaigns against muggings, grafitti, drugs etc. or by organising competitions between schools (where everyone gets some sort of prize or recognition) or creating artists' boards at strategic places for grafitti 'artists';

b) coordinate and support such initiatives that are in accordance with its aims and objectives;

c) to serve as a source of information for local organisations with similar objectives;

d) to bring and involve decision makers of various agencies in the project area into the Project;

e) to act as an informal but representative body in the Project area for seeking official assistance and support from the council, statutory agencies, local businesses etc. for projects in the area;
f) to promote the awareness and involvement of the community in the reduction of anti-social behaviour through anti-crime campaigns, by publishing and circulating newsletters etc;

g) to provide when necessary and where there is no other service, direct small grants and advisory support to get small sub-projects started;

h) to seek from various organisations including the business community, sponsors for projects that will be noticeable in the area and acknowledged as improving the quality of life and contributing to the reduction of crime or opportunity for crime;

The committee should accordingly be dissolved and a new one reconstituted.

The principal features of the framework at Appendix E are its breakdown of the structure into more manageable and locally homogeneous units, ones in which individuals should feel that their interest and interests were being looked after.

Resources

a) Resources should be used on projects initiated by Ladworth rather than on externally suggested projects.

b) Other sources of funding should be vigorously sought and exploited.

c) Resources should be set aside for publicity and sponsorship of events.

d) Allocation of resources as grants should only occur as a last resort.

General

a) The project should set up a newsletter to enable a full flow of information and exchange of ideas in the project area on experiences, difficulties etc. and to inform the community of the project's activities.

b) An office should be acquired for meetings so that Ladworth has a clearer identity (ideally this should be close to the administrator's office).

c) Liaison with neighbourhood offices, and with projects outside Ladworth, should be an integral part of the project.
It is reasonable to conclude that the operations of Ladworth could improve if the suggested structural readjustment could be undertaken, if only because, in the words of one interviewee, the current structure and status quo is "too big to fight small battles and yet it is too small to fight wars".

If the committee decides to implement these suggestions, in part or whole, it may be possible to give further advice but no major time-consuming effort can be promised.
APPENDICES

Appendix A - Project Proposal
Appendix B - Interim Report
Appendix C - Map of Project Area [Cl & C2 command area maps]
Appendix D - Ladworth Project Constitution
Appendix E - Proposed structure for Ladworth project.
We propose to work with the Ladworth Project Steering Committee and carry out a study relating to the following aspects of the Ladworth Project:

(a) the aims and objectives of the Project;
(b) the interactions between the members of the Steering Committee; and
(c) formal communication and other links between the Project and its clients.

The study will be carried out using various analytical tools developed for the study and analysis of human activity systems. It will involve,

(i) interviews with a sample of the following involved parties:
(a) clients;
(b) ex-officio and elected members of the Steering Committee; and
(c) organisations, statutory agencies and individuals [e.g. councillors] who are in any way connected with the project; and

(ii) examination of data in documents pertaining to the project, as advised by the Committee.

The large number of interests and individuals involved with the project and the relatively small financial resources available imply that firm control is essential in judging what can be done and how it can be made effective.

It is inevitable in such complexity that many different perceptions of the role of the Committee and of the purposes of its various activities will exist.

We believe that although all activities that we are so far aware of are potentially relevant to an originally stated aim of the Project, namely "crime reduction" or "crime prevention", it is far from clear on what criteria secondary aims are chosen that may lead to impact on crime. It is possible that a new statement of aim is required, at this stage, e.g. a more general social betterment programme might be a more useful primary aim of the Committee.
The aim of our study will therefore be to assist the Project Committee to clarify and make explicit the purpose of Ladworth and assess the effectiveness of the Committee's strategies for carrying out any stated aims. A corollary to this is that the study will also attempt to identify and open for debate conflicting issues and come up with suggestions on possible ways of dealing with these.

The time we have available for this study is 5-6 months; our priority will be to establish the principles of a way-ahead that can be put before the Committee by June 1987. The work will be conducted through regular interactions with, and reports on progress to, the Committee.

'Yemi Adegoke
Professor Ken Bowen [Supervisor]
January 1987
Appendix B

LADWORTH PROJECT - An Interim Report

by

'Yemi Adegoke

The accompanying diagrams are to enable the committee members to follow the presentation and do not represent any definite statement on Ladworth. The figures will be used as communication aids to assist in the clear depiction of the Ladworth Project (i.e. its structure, relationships and perceptions), in the light of its stated aims and objectives.

FIG.1 represents in a block diagram form the structure of the Project as at present. It depicts the two groups performing the Project's main activities. Various questions arose out of this diagram and it is the answers to these questions that will be considered in our final report about the structure of Ladworth's future.

FIG.2 reflects the relative position of the Committee in the Ladworth environment and raises questions on the relationship between the Project and the community, especially in the matter of community involvement with the project. The emphasis of this diagram and the subsequent questions is on the community because of the stated aims and objectives of the Project i.e. "to reduce/prevent crime within the community" and "to improve the quality of life in the community". The answer to the questions raised in FIG 2 will be used to devise possible means of improving participation.

FIG.3 looks at a process that voluntary organisations probably follow before deciding whether to actively involve themselves with Ladworth or otherwise.

The answers derived from the questions raised by the diagrams will be used to assess how well informed about Ladworth some voluntary organisations are, and how their perception of Ladworth could be improved and thus their involvement increased.

FIG.4 is a schematic representation of the perceptions of the parties involved in Ladworth. The answers to the questions raised by the diagram would assist us in formulating a structure that may provide a more unified and acceptable framework for Ladworth activities.

(This is a slightly modified version of the earlier submission to the committee)
FIG 1 LADWORTH STRUCTURAL REPRESENTATION

S.A. - Statutory Agencies
E.M. - Elected Members (councillors)
V.O. - Voluntary Organisations
L.S.C. - Ladworth Steering Committee
R.M.G. - Resource Management Group
C.P.G. - Crime Prevention Group
C.A. - Core Area

Questions Arising from Fig 1
a) How effective is the structure?
b) How efficient is the structure?
c) How representative is this structure?
d) How could the structure be improved?
e) Are there alternative structures?
f) Are the aims and objectives:
   (i) explicit
   (ii) clear
   (iii) consistent?

These questions should be answered in relation to the stated aims and objectives of Ladworth.
Questions about the project arising from Fig 2

a) Why are some organisations and individuals not actively involved?
b) Why are some organisations/individuals actively involved?
c) How could active participation be improved?
d) Is the status quo satisfactory?
e) How could the status quo be improved?
f) Is the project to be defined by the actions of the committee or by the influence within the Ladworth environment?

(Involvement in the committee need not be a sole measure of involvement in the project as is implied by the last question).
FIG 3  A TYPICAL VO PERCEPTION FORMULATION PROCESS
Questions arising from Fig 3

a) Is the perception box [the database] suitably informed about Ladworth?

b) How logical is the analysis?

c) How objective is the assessment? (comparator)

d) Follow-up questions
   (e.g. if the answer to question (a) is negative, what could be done to modify the perception box?)
<table>
<thead>
<tr>
<th>Client</th>
<th>Police, Community.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actors</td>
<td>S.A.s, Council, V.O.s.</td>
</tr>
<tr>
<td>Transformation</td>
<td>Improvement in the quality of life, crime prevention/reduction.</td>
</tr>
<tr>
<td>Working Framework</td>
<td>Funding, forum for complaints, cooperation with others.</td>
</tr>
<tr>
<td>Owners</td>
<td>Police, Community.</td>
</tr>
<tr>
<td>Environmental and Wider System Constraints</td>
<td>Distrust, competition, political differences.</td>
</tr>
</tbody>
</table>

**Fig. 4a Typical V.O.s' perceptions**

<table>
<thead>
<tr>
<th>Client</th>
<th>Police, community, other S.A.s.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actors</td>
<td>V.O.s, Police, S.A.s, Council.</td>
</tr>
<tr>
<td>Transformation</td>
<td>Improvement of life, crime reduction - soc.serv, NACRO, etc. Crime reduction/prevention. Improvement of life - housing, Police etc.</td>
</tr>
<tr>
<td>Working Framework</td>
<td>Interagency co-operation, funding?</td>
</tr>
<tr>
<td>Owners</td>
<td>Police, community.</td>
</tr>
<tr>
<td>Environmental and Wider System Constraints</td>
<td>Geographical boundaries, inter-agency competition, funds.</td>
</tr>
</tbody>
</table>

**Fig. 4b Typical S.A.s' perceptions**

<table>
<thead>
<tr>
<th>Client</th>
<th>Community, Police, S.A.s.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actors</td>
<td>V.O.s, S.A.s, Council.</td>
</tr>
<tr>
<td>Transformation</td>
<td>Improvement of life, crime prevention/reduction.</td>
</tr>
<tr>
<td>Working Framework</td>
<td>Forum for discussion? Funding?</td>
</tr>
<tr>
<td>Owners</td>
<td>Police, Community, S.A.s, Council.</td>
</tr>
<tr>
<td>Environmental and Wider System Constraints</td>
<td>Geographical/ward limitations, political differences, funds.</td>
</tr>
</tbody>
</table>

**Fig. 4c Typical Elected members' perceptions**
Questions arising from Fig 4

a) How identical or otherwise are these perceptions?
b) On what basis were the perceptions formed?
c) In the light of present Ladworth activities, how accurate are these observations/perceptions?
d) How could the identified constraints be removed or their effects minimised?
e) In the light of the answers to the above and to the answers to
   (g) Fig 1,
   (g) Fig 2,
   (d) Fig 3,
are these perceptions satisfactory for the future progress of the Ladworth project?
APPENDIX D
1. NAME

The name of the project is "The Ladworth Project" hereinafter called "the Project".

2. OBJECTS

2.1 The Project is established to assist financially, and in an advisory role any activity within the area shown on the attached map, whose aims include the reduction or the prevention of crime and the consequent improvement of the quality of life in the Project area. Activities assisted may be with the victims of crime, with known offenders, with those thought to be at risk of offending, or in the wider community. The assistance preferred is to be without distinction as to sex, race or religion.

2.2 The Project shall bring together representatives of voluntary organisations, government departments, statutory authorities and other relevant bodies and individuals in furtherance of the objects of the Project.

3. POWERS

In furtherance of the said objects but not otherwise the Project may:

3.1 make grants and donations to activities, in the defined area using the procedures set out in the financial constitution.

3.2 receive grants and donations and otherwise raise money.

3.3 promote and carry out or assist in promoting and carrying out research, surveys and investigations and publish the useful results thereof.

3.4 collect and disseminate information on all matters affecting the said objects and exchange such information with other bodies having
similar objects.

3.5 undertake, execute, manage or assist any charitable trusts which may lawfully be undertaken, executed, managed or assisted by the Project.

3.6 purchase, take on lease or in exchange, hire or otherwise acquire any property and any rights and privileges necessary for the promotion of the said objects and construct, maintain and alter any buildings, or erections necessary for the work of the Project.

3.7 make regulations for any property which may be so acquired.

3.8 sell, let, mortgage, dispose of or turn to account all or any of the property or assets of the Project.

3.9 employ and pay any person to supervise, organise and carry on the work of the Project.

3.10 do all such other lawful things as are necessary for the attainment of the said objects.

4. **MEMBERSHIP, COMMITTEES OFFICERS**

4.1 The project will be managed by a Steering Committee selected at an Annual General Meeting. The Steering Committee will comprise an equitable balance of representatives from:

(1) Properly constituted voluntary organisations operating within the Project’s geographic area.
(ii) local councillors (3 nominated by the Ladywood Area Sub Committee and councillors nominated one each by the Small Heath, Edgbaston, and Perry Barr Area Sub Committees, plus one member of the West Midlands Police Authority)

and (iii) officers representing statutory agencies.

4.2 The Steering Committee may appoint and determine sub-committees terms of reference, powers, duration and composition. Sub committees shall be subject at all times to the authority of the Steering Committee.

4.3 The Chairperson of the Steering Committee shall be an "elected member" of the Ladywood Area sub committee and be appointed annually by the Steering Committee members following an annual General Meeting. In the absence of the Chairperson the Steering Committee shall elect a temporary Chairperson from amongst themselves for that meeting. The Steering Committee shall appoint other officers it deems appropriate. All such appointments shall be in an honorary capacity.

4.4 The Steering Committee may co-opt additional persons as members of either the Steering Committee or its sub-committees, but such members will not have voting rights on the Steering Committee.

5. FINANCE

5.1 All monies disbursed on behalf of the Project shall be applied to further the objects of the Projects and for no other purpose, provided that nothing herein contained shall prevent the payment in good faith of reasonable and proper remuneration to any person employed by the Project, or the repayment of reasonable out of pocket expenses.
5.2. The accounts and general financial arrangements of the Project shall be governed by the financial constitution.

5.3 An audited statement of the Project's accounts will be presented at each Annual General Meeting.

6. MEETINGS

6.1 The first General Meeting of the Project shall be held not later the 31st October, 1985. An Annual General Meeting of the Project shall be held not later than the 30th June each year at a date, time and place that the Steering Committee shall determine. At least 21 clear days notice shall be given in writing to each organisation represented on the Steering Committee, and public notices shall be posted inviting residents of the Project area to the meeting.

6.2. The purpose of the General Meeting and subsequent Annual General Meetings shall be to receive reports relating to the Project and to elect the members of the Steering Committee as determined in clause 4.1 (i) and to appoint those members as determined by clause 4.1. (iii) above.

6.3 Meetings of the Steering Committee or its sub committees may be held at such times and places as are designated by the Steering Committee, any of the above meetings can be open to the public if the Steering Committee so decides.

6.4 The Steering Committee may call a Public Meeting or declare any of its meetings open to the public.

6.5 QUORUM

At any meeting of the Steering Committee a quorum will consist
of at least 1/3 of its voting membership and must include a representative of:

(i) the voluntary organisations
(ii) the local councillors (as set out in clause 4.1 (ii))
(iii) the statutory organisations

7. DISSOLUTION

7.1 If the Steering Committee by a simple majority (two thirds) decide at any time to dissolve the Project it shall call a special meeting of all voting members of the steering Committee of which meeting not less than 21 days notice (stating the terms of the resolution to be proposed thereat) shall be given. If such decision shall be confirmed by a simple (two thirds) majority of those present and voting at such a meeting the Steering Committee shall have power to dispose of any assets held by on behalf of the Project.

7.2 In the event of the Project being dissolved any funds will be disbursed within the Project area in accordance with the stated objects of the Project.

8. ALTERATION TO CONSTITUTION

Any alteration of this Constitution shall receive the assent of not less than two thirds of the voting members of the Steering Committee present and voting at a meeting specifically called for the purpose. Provided that notice of any such alteration, setting forth the terms of the alteration, shall have been received in writing by each organisation represented on the Steering Committee not less than 21 clear days before the meeting at which the alteration is to be brought forward (provided that no alteration shall be made which would have the effect of causing the Project to cease to qualify as a Charity at law).
APPENDIX E

P.N.C. - Fastry Box Committee
S.N.C. - Small Youth Committee
L.C. - Ledywood Committee
E.C. - Edgewater Committee
L.H.C. - Ladworth Management Committee
P.S.C. - Projects Subcommittee
- generate initiatives
- promote ideas
- initiate projects
R.M.A.E. - Resource Management Subcommittee
- seeks funds
- distributes projects and publications
C.P.S.C. - Crime Preventive Subcommittee
- helps the Core Area
- coordinates C.P. efforts
- advisory and logistics support for groups
P/S.I.C. - Publicity/Information Subcommittee
- collects data from
  - Core Areas
  - V.C.A., S.A.C. and Councillors
- collates and publishes newsletter
PROPOSED STRUCTURE FOR LADWORTH

Key:

P.B.C. - Perry Bar Committee
S.H.C. - Small Heath Committee
L.C. - Ladywood Committee
E.C. - Edgbaston Committee
L.M.C. - Ladworth Management Committee
P.S.C. - Projects Subcommittee
  - generates initiatives
  - promotes ideas
  - initiates projects
R.M.S.C. - Resource Management Subcommittee
  - seeks funds
  - finances projects and publications
C.P.S.C. - Crime Prevention Subcommittee
  - help for Core Areas
  - coordinates C.P. schemes
  - advisory and logistics support for groups
P/I.S.C. - Publicity/Information Subcommittee
  - collects data from
    Core Areas
    V.O.s, S.A.s and Councillors
  - collates and publishes newsletter.