GOVERNANCE IN THE UK: FUZZY FEDERALISM

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Abstract

In this paper Dr Coghill argues that the complexity of modern British society and the uncertain environments in which governments operate require new approaches to governance. Whitehall must question whether good governance is increasingly endangered by impossible contradictions between the desire for central control over events and the stifling impact of centralism on the innovation required to provide the responsive rule which is at the heart of democracy. The implications and potential benefits of approaching UK society as a decentralised complex adaptive system rather than basing governance on centralised control from Westminster are examined and possible areas for research discussed.

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INTRODUCTION

Nations states are increasingly affected by globalisation and there is considerable interest in new forms of governance to accommodate this development (Hutton & Giddens 2001). However, this paper concerns changes occurring within the nation state that are leading towards the emergence of new forms of governance within the UK. The most prominent changes have included the establishment of the new Scottish Parliament and the new Welsh National Assembly and the continuing efforts to overcome the factors inhibiting devolved government in Northern Ireland. Significant though these developments are, other developments are of major importance. These include the re-establishment of the Greater London Authority, provision for the direct election of local government mayors, the transfer of the provision of many public services to the private sector and strong roles played by non-government, not for profit organisations.

These new forms have some of the functional characteristics of federalism but lack the formal distribution of constitutional powers commonly found in federations. Rather, they rely on a mix of formal statutory instruments, culture and the effects of fuzzy logic to create what might be termed "fuzzy federalism".

The place of the parliament in the British constitution has been subject to one of the most profound cultural changes. The 1688 Bill of Rights established the Parliament as "the ultimate and transcendent power", thus creating parliamentary sovereignty. The "indivisibility of parliamentary sovereignty" is claimed to be a continuing basis of objection to devolution (Meehan 1999, 30).

However, the extent of the parliament's sovereignty has changed dramatically since 1688. The extension of universal franchise and the evolution of democratic practice and culture have largely converted that into popular sovereignty. That is not to suggest that all of the instruments of popular sovereignty, such as citizen initiated referenda, are available to the British people. Rather, it is to recognise that the Parliament is now highly sensitive to citizens' perceptions of their needs. In the absence of a written constitution, the change in defacto sovereignty amounts to change in a de juro sovereignty. The UK constitutional monarchy can now be seen as a crowned , democratic republic.

UK is a unitary state in terms of conventional classifications. This paper will argue that such a formal classification is misleading. Whilst in formal legal terms the British Parliament at Westminster retains the ultimate authority to revoke powers it has legislated to devolve, in reality power is shared and effectively dispersed within British society.

SECTORS OF THE CROWNED DEMOCRATIC REPUBLIC

Three major sectors in contemporary communities[1] have been identified, albeit with some slight variations in the definitions given by different authors.
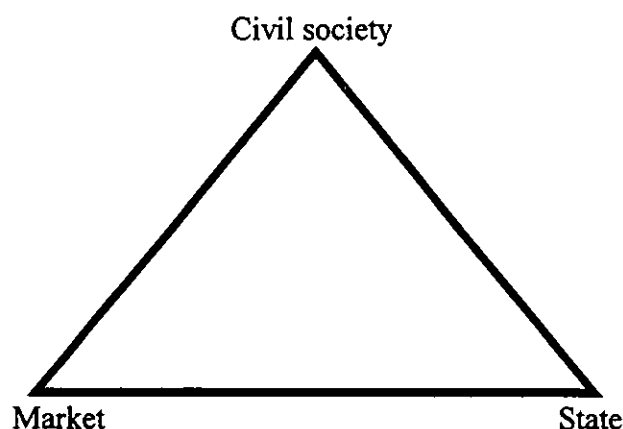
Holloway (1993) sees the sectors as the government, business and private, non-profit - see Figure 1.

Figure 1: The Three Sectors of Society (Holloway 1993).

	Sector	Symbol	Primary Resource Mobilisation
First	The Government Sector (including. armed forces)	The Prince The Merchant	Command and Coercion
Second	The Business Sector	The Merchant	Trade and Exchange
Third	Private, Non-Profit (Civil Society)	The Citizen	Shared Values and Commitment

Offe (1996) is cited as describing a triangle of forces within society. These are the State, the Market and the Community, or civil society. The three must be in a sort of balance, shown in Figure 2, because if one of them is too strong, it will destroy the good society.

Figure 2: Organisation of Society (after Offe 1996)

Costello (*pers. comm.*) has used the analogy of the village square, bounded by the town hall, the church (the embodiment of the community) and the market.
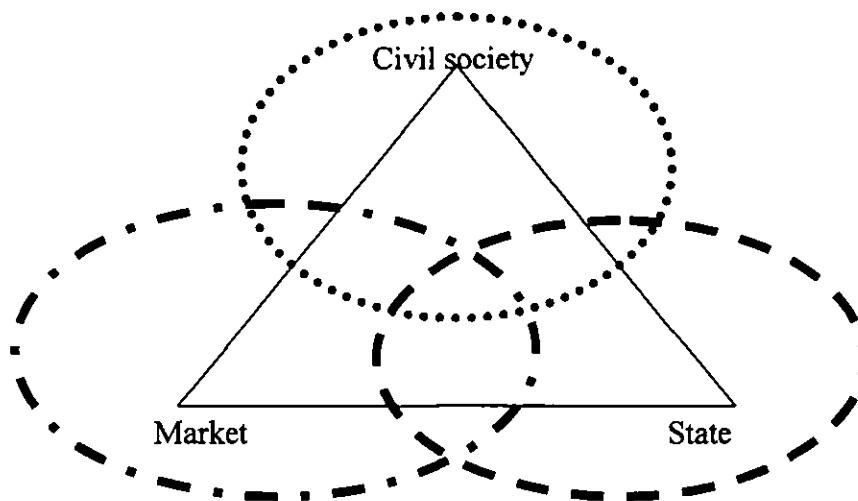
The three models all make the point that the governance of a community is not the sole prerogative of the State but is shared between three clearly identifiable sectors.

However, it would be mistaken to see the three sectors as static or as in stable, constant balance. Offe has commented on the desirability of balance between the sectors, acknowledging that the relative power and

influence of each may change. Costello has suggested that the market has come to dominate at the expense, in more recent times, of the town hall and that the role and influence of the church has declined.

In fact, the three sectors intersect and overlap. In a society in which the sectors are in balance, the relationship may be represented as shown in Figure 3.

Figure 3: Balanced relationship between State, Market and Civil Society

The overlap between the sectors recognises that the sectors both interact and are interdependent, as will be discussed in more detail later in this paper. The relationships may have both formal and informal elements.

In a modern society, the market is dependent on a regulatory environment which creates greater certainly and stability, such as property law and contract law enacted by the State. The State is dependent on the Market providing many goods and services, some of which may be provided to or on behalf of the State. The informal relationship between agents[2] in the State and Market sectors are important to the operations of both sectors. The nature of those relationships raises questions to which we shall return.

The community is dependent on civil society for the satisfaction of many needs, the most basic being family units which provide child-raising. The Market does not provide the toilet training of its workforce! Like the Market, the operation of Civil Society may be facilitated by the State. Civil Society provides agents with much of the skill and experience in democratic practices on which the State is dependent for good governance.

Changes in the role and influence of the three sectors, such as in a strongly centralised command economy State, are reflected in Figure 4.

Figure 4: Relationships between State, Market and Civil Society where the role of the State is dominant.
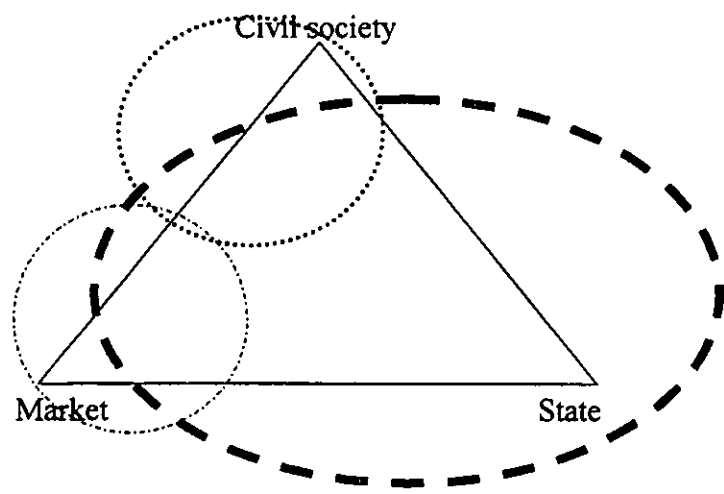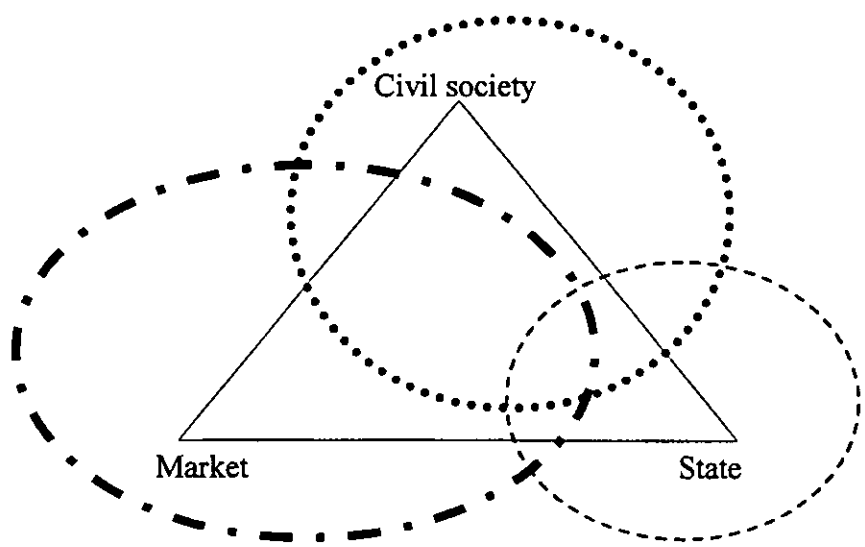

Figure 5: Relationships between State, Market and Civil Society where the role of the State is relatively weak.

This example illustrates the relationship where the role of the State is relatively weak and where both the Market and Civil Society are strong.

The relationships between the three sectors thus are not fixed but are dynamic.

The sectors themselves are complex, as indicated by Figure 6. Agents, which may be individuals or institutions (some quite large), interact and are interdependent with each other within and between sectors.

Some agents may be active in more than one sector and some institutional agents may appear to behave as if members of more than one sector. Thus, a local government may behave as a State agent in exercising executive powers under law, as a Market agent in producing and supplying certain goods such as housing to the market and as a Civil Society agent when cooperating in community action seeking change by another source of power.
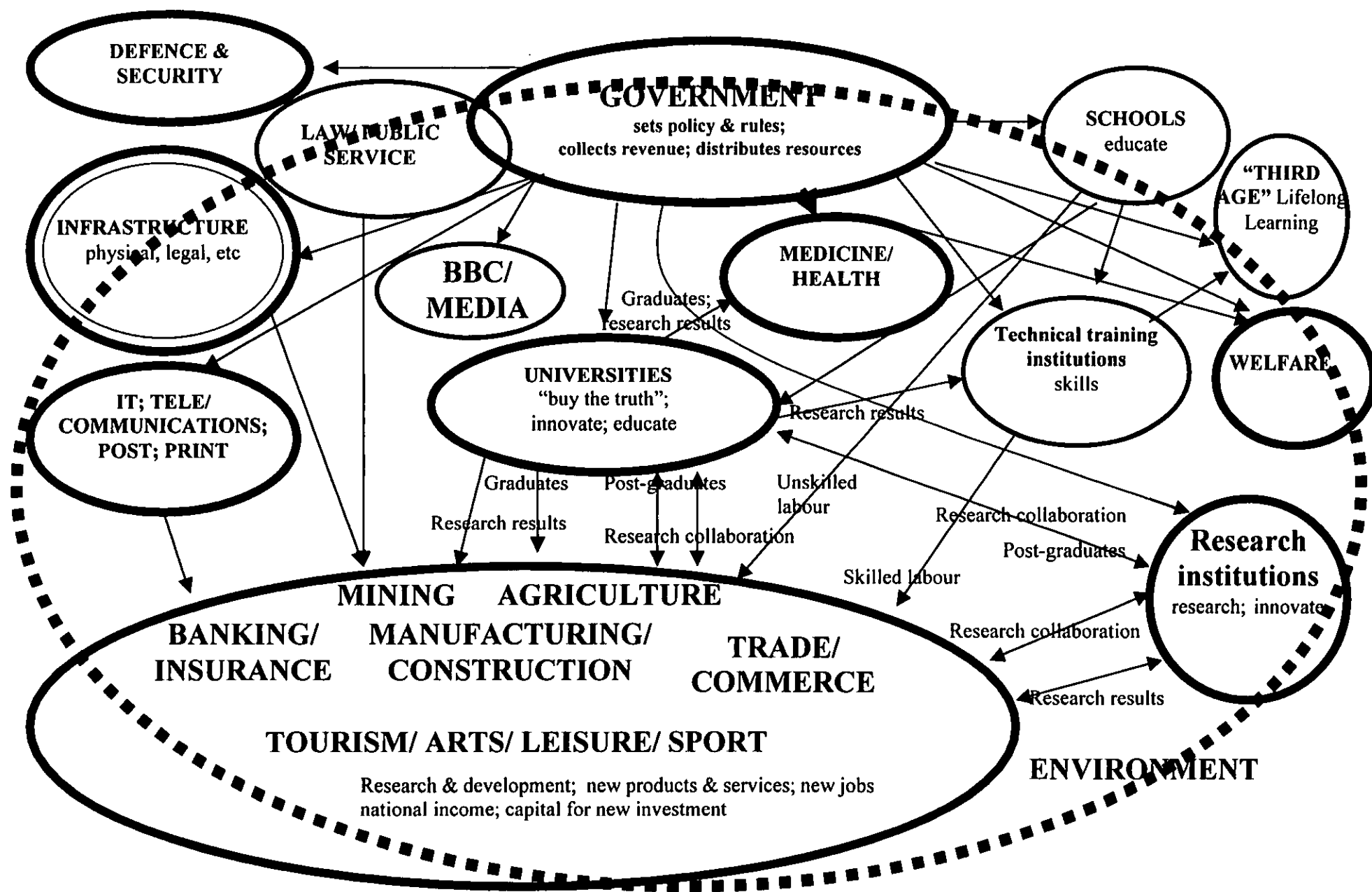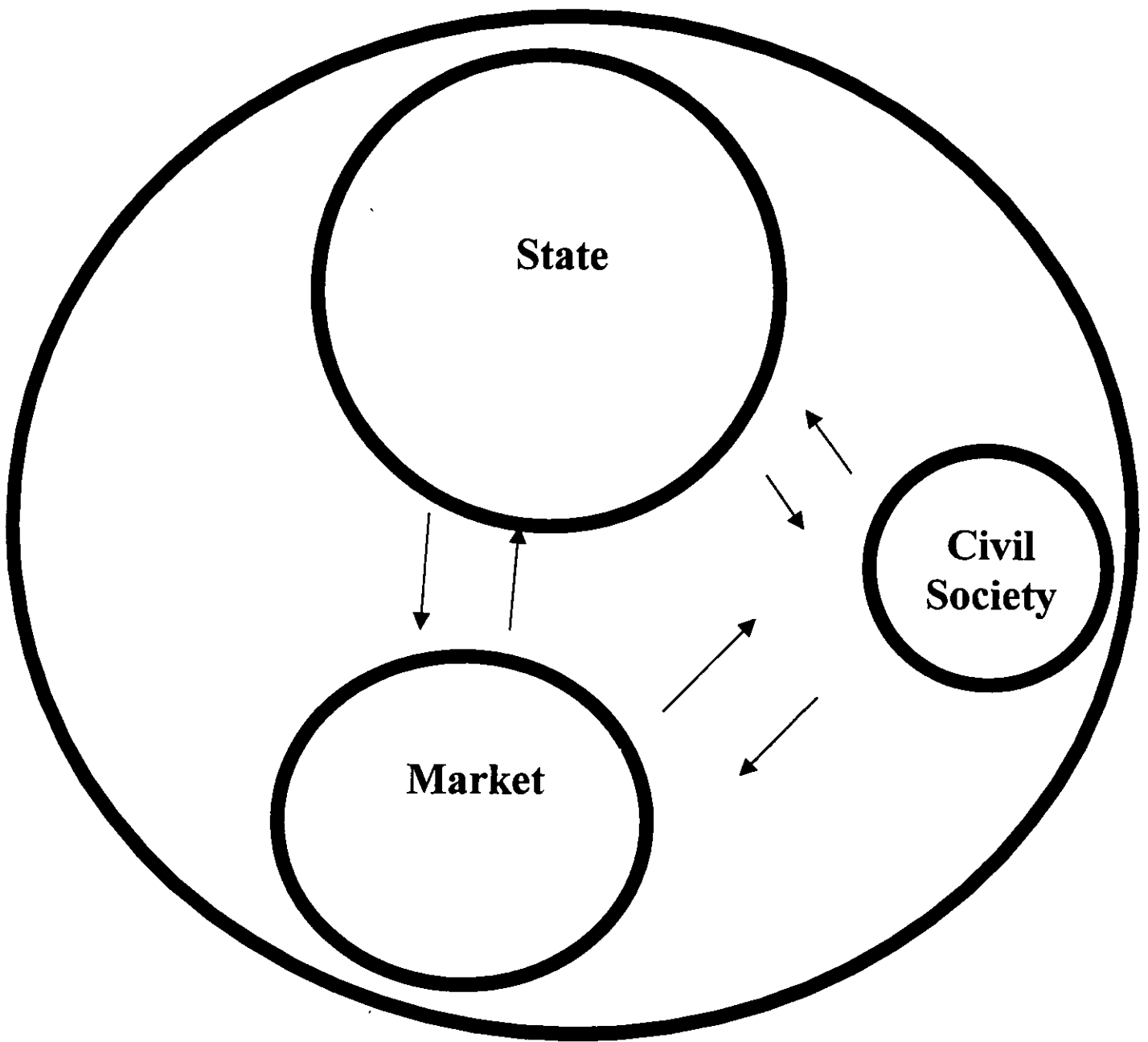
DEFENCE & SECURITY

LAW/PUBLIC SERVICE

GOVERNMENT
sets policy & rules;
collects revenue; distributes resources

SCHOOLS
educate

"THIRD AGE" Lifelong Learning

INFRASTRUCTURE
physical, legal, etc

BBC/ MEDIA

MEDICINE/ HEALTH

Graduates;
research results

Technical training institutions
skills

WELFARE

IT; TELE/ COMMUNICATIONS; POST; PRINT

UNIVERSITIES
"buy the truth";
innovate; educate

Research results

Graduates   Post-graduates   Unskilled labour

Research results   Research collaboration

Research collaboration   Post-graduates

Research collaboration

Skilled labour

Research institutions
research; innovate

MINING   AGRICULTURE

BANKING/ INSURANCE   MANUFACTURING/ CONSTRUCTION   TRADE/ COMMERCE

Research results

TOURISM/ ARTS/ LEISURE/ SPORT

Research & development; new products & services; new jobs
national income; capital for new investment

ENVIRONMENT

Figure 6: Some relationships between agents in the State and Market sectors

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Complex System

COMMUNITY, SOCIETY AND THE COMPLEX ADAPTIVE SOCIO-POLITICAL SYSTEM

The community is thus organised through the operation of three sectors into a society which may be viewed as a **socio-political system** i.e., a sovereign society in which governance operates through Civil Society, the Market and the political institutions of the State.

The socio-political system may be conceptualised as a **complex adaptive system**[3]. The agents within society interact and are interdependent with each other. Although this model shares features of the network governance model (Jones et al 1997), the dynamic nature of the system is a major distinguishing characteristic.

The system is dynamic in that it continues to change in response to internal variations (e.g., births, deaths, new relationships, and ends of relationships, shifts in values), and variations in its external environment (e.g., war, economic crisis, drought, flood, impact of globalisation). Interactions relate to the exercise of power/control over resources (food, shelter, etc), fellow members of the community, members of subsections of the community, other communities, competition and cooperation/collaboration. Changes in the system enable it to adapt to internal or external variations. As Fukuyama has observed,

> The study of how order arises, not as the result of a top-down mandate by hierarchical authority, whether political or religious, but as the result of self-organisation on the part of decentralized individuals, is one of the most interesting and important intellectual developments of our time (Fukuyama 1999, 6).

Before proceeding with this argument, it is important to deal with a fundamental aspect of the nature of government. Complex adaptive systems are often, if not always, self-organising systems. Some may see this as an argument for allowing communities to organise themselves free of the imposition of regulation by government. Such an argument is predicated on seeing government as separate to and outside the system, which may have some validity in a colonial situation or in other cases where the community concerned is subjugated and lacks the capacity for self-determination.

In this context it is useful to adopt Jean Luc Nancy's distinction between community and society. In his typology, community is established by a shared sentiment; society is the organisation of the community through informal (normative) and formal regulatory instruments.

The agents in complex adaptive systems have dynamic relationships with each other, including aggregations and disaggregations. People and organisations are continually interacting; people find others with similar interests, leading to the formation of new alliances, coalitions and organisations; these link with others; specialisation develops and leads to further new organisations; organisations fade as circumstances change or specialisation reduces their roles. Communities aggregate into regional polities which aggregate into states. States find mutual benefit in associating internationally. Regional and community organisations find specialist roles that are less able to be fulfilled by international or national institutions.

The theory of complex adaptive systems aids understanding of the observed trend of human societies to aggregate into larger social institutions, with a parallel tendency to divide into specialist institutions, and the stabilising role which may be played by non-government institutions (e.g., organised religion) where they are able to sustain or introduce shared values (Coghill, 1997). Heylighen and Campbell suggest that

> (t)he predominant shared control for humans is cultural: beliefs spread through conformist transmission. However, the conformist mechanisms that keep beliefs similar are not sufficiently strong to keep context-dependence and communicative degradation from producing a continuous belief divergence or "nemetic drift". Thus, human society becomes a patchwork of fuzzily defined groups at different levels of aggregation, characterised by clique selfishness and hostility between competing groups. Different control mechanisms have evolved to complement the limited internalised restraint produced by shared beliefs: mutual monitoring, legal control and market mechanisms (1995).

According to this analysis, the state is an emergent entity i.e., it arises from aggregations of pre-existing agents. Democratic institutions have emerged through processes of self-regulation. Whilst their historic origins were not always the outcome of what we now recognise as democratic processes, their modern forms and functions do reflect responses to the perceived needs of the community. Thus the House of Commons was not directly representative of the people in 1688 and retained vestiges of undemocratic representation until the middle of the 20th century.

At the beginning of the 21st century the system of government can be fairly characterised as an integral and key institution within the system through which the people of the UK organise their own governance and self-regulate at the level of the state.

However, by viewing UK society as a complex adaptive system, we recognise a much wider range of entities than the institutions of government as having roles in its governance. They range from the UK equivalents of the choral societies Putnam (1993) described in Northern Italy to economically powerful business interests and influential international non-government organisations.

The nature of the interactions between agents is crucial to the functioning of the complex adaptive system. As we observe from our own personal relationships, the manner in which we behave towards another may change the manner in which that second person behaves. We may then modify our own behaviour in response. Where a third individual is involved, our conduct towards the second person may affect the second person's conduct towards the third person. The third person may then modify his or her conduct in a way that affects us and our behaviour. Similar effects occur at the levels of organisations and institutions.

Figure 7 illustrates the interactions that may exist between institutions in a simple model with only three institutional aggregations. Figure 8 illustrates the effects which may arise for interactions between only two institutions and Figure 9 illustrates how interaction between two institutions may flow through a third to affect the first.
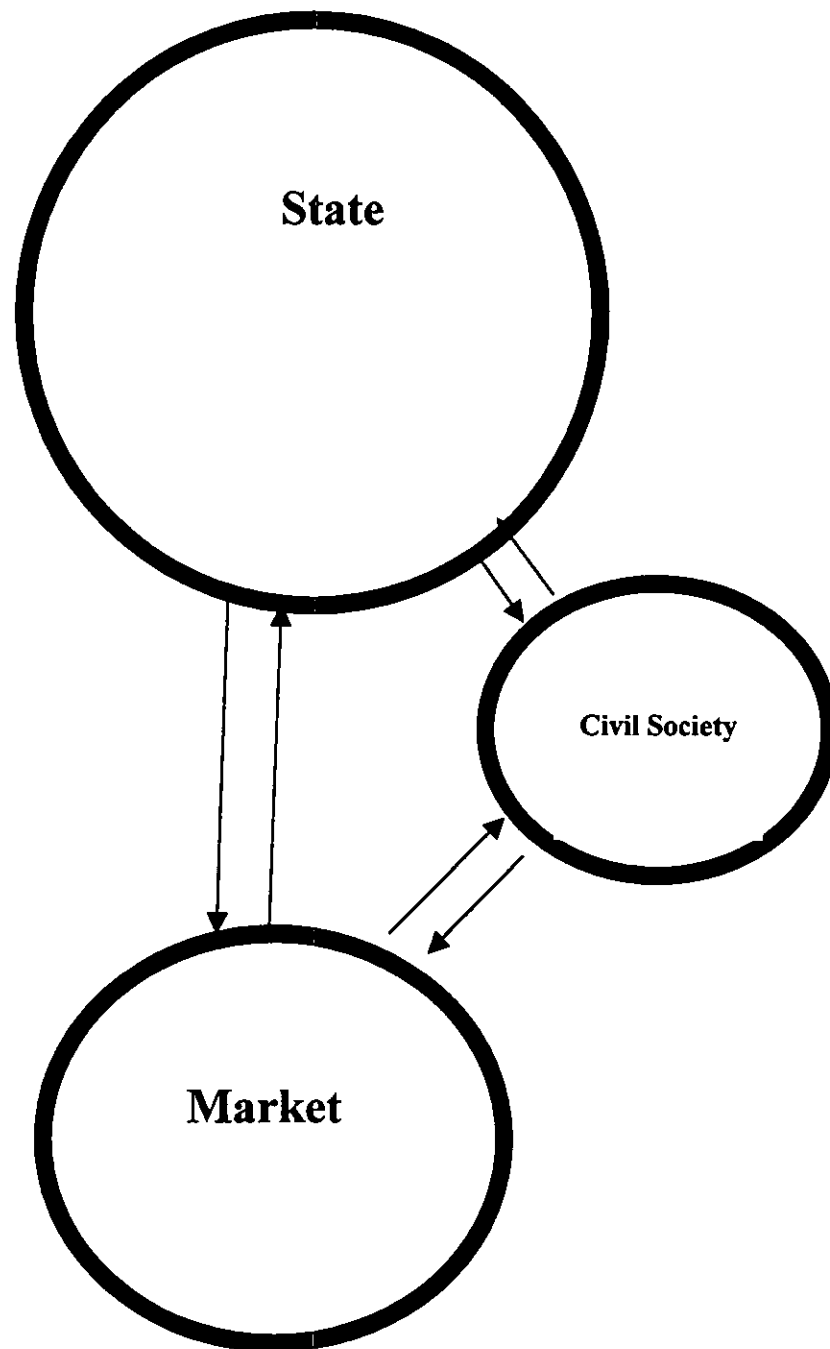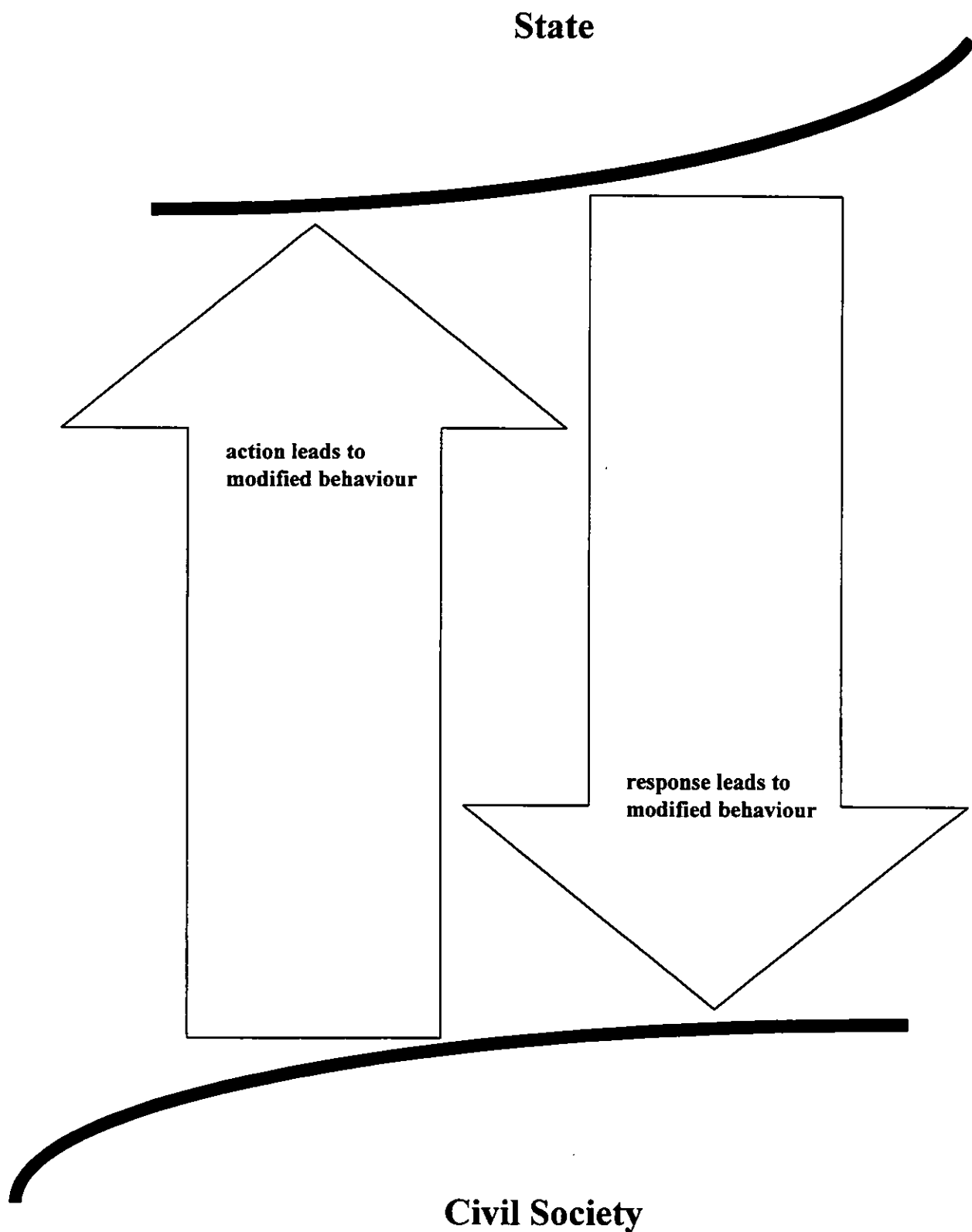
Figure 7: Simple Complex System

State

**action leads to
modified behaviour**

**response leads to
modified behaviour**

Civil Society

Figure 8: Interactions Between Two Agents

State

response of
third party
leads to
modified
behaviour by
original
agent

action leads
to modified
behaviour
by second
agent

Civil

Society

Market

response affects
third agent, leads to
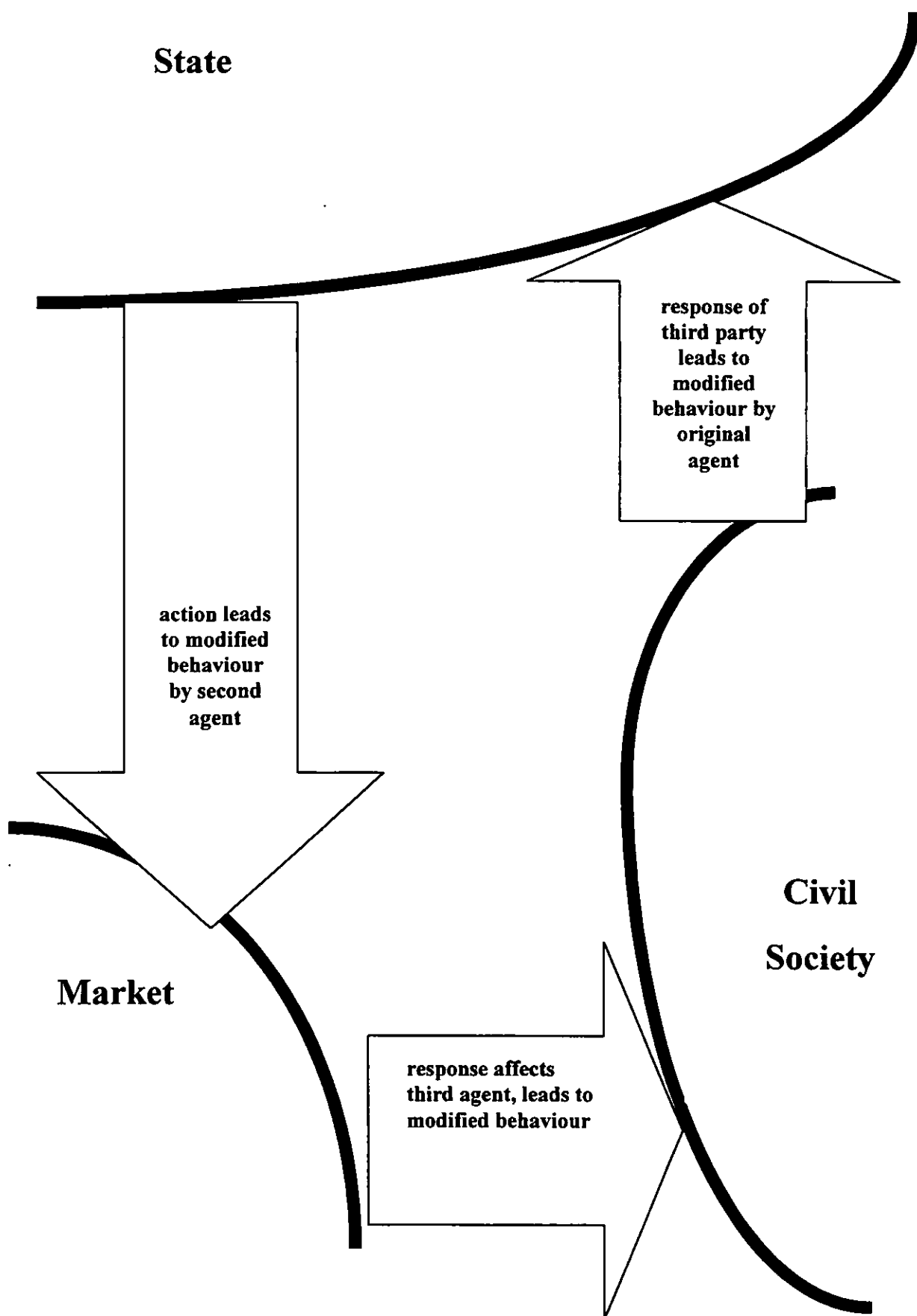modified behaviour

Figure 9: Indirect Effects in a Complex System

FUZZY LOGIC

These interactions occur according to fuzzy logic[4]. Fuzzy logic applies where actions and interactions generate decisions through the use of approximate information and uncertainty. Actions do not follow rigid, certain and predictable patterns. Actions are affected by such matters as the availability, selection and interpretation of information, assessments, estimation, judgement, values, trust, negotiation and bargaining.

Key issues to which complexity theory and fuzzy logic have been relevant are hinted at by Kooiman (1999) in referring to meta-governance in the review of the governance of socio-political systems. In almost all societies, many values which are assumed to underlie policy are contested and do not lend themselves to interpretation by a technocratic process of "fair representation" (Kooiman 1999, 87).

If such an approach is not relevant to a more pluralistic society, what factors might explain the differences?

META-GOVERNANCE

The highest level of governance – meta-governance must be considered. Meta-governance is the environment or framework within which to resolve "differences, clashes, conflicts, risks and uncertainties" in the context of complex, diverse and especially dynamic processes" (Kooiman 1999, 87). These processes involve "interactive social forces" and "the actions of a variety of social actors" (Kooiman 1999, 89). Acceptance that public management "has the responsibility to stimulate public debate about public values" (Kooiman 1999, 89) assumes that the term public management conflates at least some functions of both the political executive and the civil service. In a democracy, it is unthinkable that the political realm would not be involved in stimulating public debate. However, meta-governance suggests a much broader role for public management than merely stimulating debate.

Meta-governance would encapsulate a broader and more fundamental range of features that establish the architecture of the state's structure – indeed society's structure (using Nancy's distinction between community and society – Nancy 1991). It is similar to Mahatma Gandhi's perception of democracy. He said

> (D)emocracy must in essence, therefore, mean the art and, science of mobilizing the entire physical, economic and spiritual resources of all the various sections of the people in the service of the common good of all (Gandhi 1945).

These features include the constitution (both formal and informal e.g., conventions), the political system, societal values and culture. Again, it will be recognised that this is a less technocratic list, as it incorporates those fuzzy areas that are less amenable to quantification. Further, there is a hierarchy of "rules" where rules are defined broadly to extend from the fundamental values underpinning the culture of a community to the formal codes described as "political and managerial criteria" (Kooiman 1999, 89). In complexity theory terms, they extend from the broad overarching rules which govern the conduct of, and relationships between, all participants in a society to those rules which apply only in more specialised cases. In European terms, they may be constructed in accordance with the constitutional principle of subsidiarity. The State clearly has a major role in establishing and maintaining this architecture. The State's discharge of that role may be influenced by its interactions with other participants, but its capacity to legislate and its statutory, prerogative and coercive powers give it an authority which is unequalled.

Sibeon has proposed an alternative theoretical framework, which includes to the concepts of open and opaque (Sibeon 1999). "Open" incorporates two distinguishable concepts. The first, which I here call open participation, refers to the accessibility of a system to participation by individuals or groups within society. It includes agenda setting, which involves the limited exercise of power. The second "open", which I here call open accountability, refers to the accessibility of information, including information concerning actions by participants exercising power within the society. The former is concerned with the opportunity of citizens to become participants in the exercise of power, whereas the latter is concerned with the accountability of participants who exercise power on behalf of those holding sovereign powers i.e. citizens.

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"Opaque", as Sibeon discusses the term, is the obverse of open accountability, and possibly also open participation. It is related to the conception of the socio-political system as operating according to a stark "either/or" model whereas Sibeon recognises that the reality (e.g., the messiness of the European Union's system) is closer to an interactive, fuzzy logic model.

Sibeon uses the term amorphism, which suggests an infinite number of participating institutions (within which one might include office-holders). However, I prefer the term polycentric as the real world has a finite, although sometimes large, number of participants in any policy community or polity. For example, telecommunications and electricity supply systems involve particularly large but not infinite numbers of participants. Participants may constitute, or organise themselves in, a number of foci of power. Individual participants and these foci have different degrees of power at any one time, and the power of each and their relative powers may vary from time to time. Their degree of involvement/participation and even role may change (Coghill and Owen, 1999).

To translate this into governance terms, institutions and other organisations constitute aggregations of agents that form bargaining systems. They may, for example, coordinate, or even mobilise interests in pursuit of particular preferred outcomes (Hawes 1993, 46 after Bacharah and Lawler 1988). For example, in the case of matters considered by UK parliamentary select committees, alliances may cross between those agents within the parliamentary system and those external to it (Hawes 1993). These coalitions are not part of the formal structure, but are emergent from the interactions of the agents involved.

The nature of those relationships, and the extent to which they are regulated, affects the manner in which the system operates. Regulation occurs through controls ranging from social customs that are practiced, sometimes unconsciously, to formal laws which are enforceable using the coercive powers of the State.
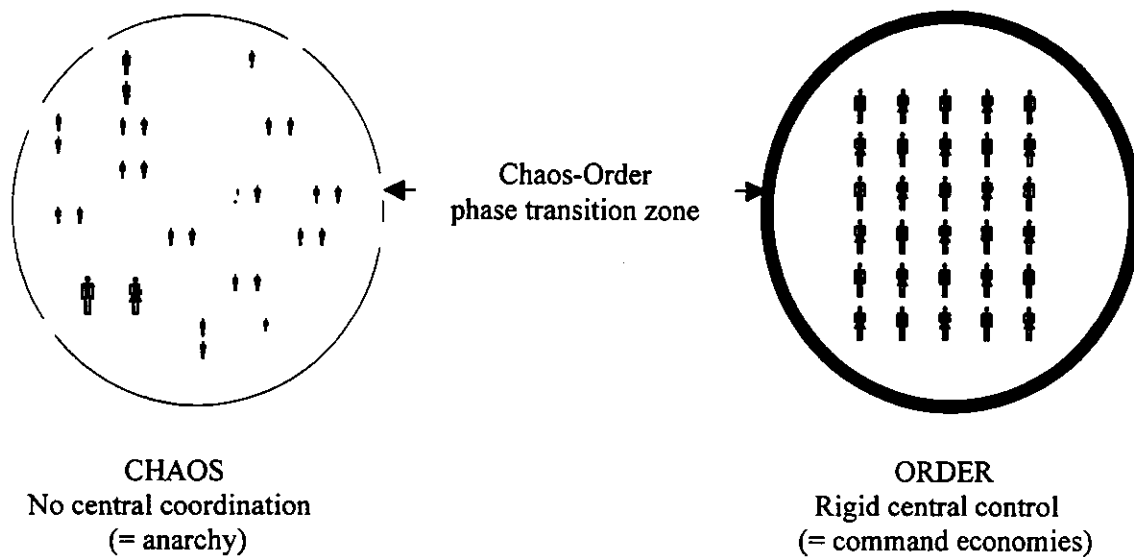
GOOD GOVERNANCE

Good governance[5] aims to produce the best outcomes for the members of a community. Complex adaptive systems produce their best outcomes at the transition zone between order and chaos. It is in that dynamic phase that they are most adaptive. More rigid order inhibits adaptation. An absence of order prevents the system organising itself to respond to change. According to Waldrop (1992) in his early review of the emergence of complexity theory, "(C)omplex systems are said to be 'on the edge of chaos' where 'new ideas and innovative genotypes are forever nibbling away at the edges of the status quo' and where there is a ' ... constantly shifting battle zone between stagnation and anarchy, the one place where a complex system can be spontaneous, adaptive and alive" (Waldrop 1992, 12).

Kauffman (1995) indicates that, central to the findings of complexity theory research, is that complex systems work best with a moderate degree of organisation - governance. Comparing systems he argues:

> We will find an ordered regime where poor compromises for the entire organisation are found, a chaotic regime where no solution is ever agreed on, and a phase transition between order and chaos where excellent solutions are found rapidly (Kauffman 1995, 247).

Figure 10: The Phase Transition Zone

Chaos-Order
phase transition zone

CHAOS	ORDER
No central coordination	Rigid central control
(= anarchy)	(= command economies)

ADAPTATION TO CHANGE & UNCERTAINTY

There are at least two distinguishable major influences on societies to which adaptation may be required. These are change and uncertainty. Change may relate to factors that are predicted or at least are capable of being anticipated, or may arise from uncertainty. Uncertainty may be in either the sense that causes of change are unpredictable or the sense of apprehension over the unknowability of the effects of events and influences that are beyond the control of the agent or the society.

Adaptation to the predictable form of change affecting a society requires that it has good information systems enabling knowledge of possible change to widely known and to be processed in ways that allow the emergence of new responses which anticipate its effects. A rigid system of governance risks the flow of information being restricted and that information being considered by a narrow range of agents whose perspectives or interests limit the opportunity for emergent thinking and action. Emergent thinking and action are at the core of innovation.

Adaptation in response to uncertainty raises more complex issues. Uncertainty may be defined is a number of ways.

Judge refers to a

Fourfold principle of uncertainty in governance

... a generalized Heizenberg principle operates in the social sciences (Sposito 1969), the dilemmas ... could well be summarized in a four-fold principle of uncertainty as follows:

• A governing mode in which it is easy to say "no" overtly, makes it very difficult to say "yes" except covertly, whereas one in which it is easy to say "yes" overtly makes it very difficult to say "no" except covertly.

• A governing mode which encourages overt declarations of consensus has great difficulty in accepting fundamental differences in practice except covertly, whereas one in which

differences are realistically accepted has great difficulty in establishing consensus except covertly.

- A governing mode of requisite variety for long-term continuity has great difficulty in elaborating appropriate short-term programmes except covertly, whereas one in which operationally relevant short-term programmes are easily elaborated has great difficulty in ensuring any policy of long-term significance except covertly.

- A governing mode which can be made meaningful and inspiring has great difficulty in taking into account the full complexity of a practical situation except covertly, whereas one which takes into account that complexity in all its operational detail cannot be meaningful and inspiring except covertly. (Judge 1987)

In the field of corporate governance, Jones et al refer to

- Demand uncertainty is generated by unknown and rapid shifts in consumer preferences. This is exemplified in the film industry where it is unclear what makes a film a hit with an audience.

- Behavioural uncertainty (occurs when agents) may disagree about what the initial customized exchange involved or whether (to) fulfil their initial, agreed upon, obligations now that circumstances have changed.

- Environmental uncertainty (the uncertainty existing in the socio-political, economic etc environment in which the agents operate)

- Output uncertainty (undefined) (Jones et al 1997).

The physical scientific disciplines have used different approaches, exemplified by Petersen et al, after Hilborn (1987), who refer to three different types of uncertainty

- Statistical uncertainty is the uncertainty that surrounds a variable when its state at any one point is unknown, but the probability distribution that characterizes that variable is known. For example, the probability of a tree being struck by lightning is a form of statistical uncertainty.

- Model uncertainty occurs when the connections between variables are uncertain. Such uncertainty allows the prediction of outcomes, but makes it difficult to assess their likelihood.

- Fundamental uncertainty describes novel situations for which existing models do not apply (Peterson et al 1997).

Each of these typologies has some relevance to the governance of socio-political systems. Although it is beyond the scope of this paper to examine them in detail, they are useful in considering the effects of uncertainty on governance.

The classes of uncertainty affecting governance can be as diverse as: military attack; the insecurity engendered by the volatility of market prices for petroleum, other commodities, shares and currencies; the financial failure of a major employer; global warming; severe weather conditions; outbreaks of violence; disease epidemics; and the death of a leading personality. Judge's principles highlight the range of ways in which these uncertainties can tip a society's response towards or away from successful adaptation.

A key issue then is how a system of governance can facilitate dealing with uncertainty. An important feature is the capacity of the society to respond quickly and effectively to the direct effects of events affected

by uncertainty and to provide the reassurance necessary to limit adverse impact on community confidence. The latter may involve a tension between the desirability of stability and security on the one hand, and the importance of an environment which stimulates the emergence of solutions. It is again in this context that the phase transition zone may be relevant to the emergence of the best outcomes.

The most successful States - those that produce the best outcomes for the members of a society, in which citizens appear to enjoy the highest levels of freedom as capacity (Sen 2001) - have governance that is in the phase transition zone between total central control and an absence of central regulation i.e., systems of government intermediate between rigid control and anarchy. Too much central control blocks creativity, innovation and adaptation. Total lack of central control allows powerful agents to pursue their own interests at the expense of those with lesser capacities and ultimately society as whole. How those diverse interdependencies and interactions are handled is a key to a society's capacity to adapt to change.

To produce those outcomes requires governance that facilitates the interaction between interdependent agents discussed above. It is the nature and quality of the relationships within and between the sectors that is the key to the outcomes of the socio-political systems. Put another way, the "interrelationships and interactions between the parts of the whole are more important than the parts themselves" (Duignan 1998, 8).

To achieve this, the system must be "transparent, accountable, just, fair, democratic, participatory and responsive to people's needs" (World Conference on Governance, 1999). Each of these factors - transparency, accountability, justice, fairness, democracy, participation and responsiveness - affects the capacity of people and institutions to interact effectively with other members of society. This in turn affects the capacity of a society, as a complex system, to adapt to changes in its environment.

One of the factors in failings of the command economies has been their stifling effect on adaptation through the dampening of innovation that occurs when interdependence and interaction are rigidly controlled by central authority.

Advocates of the narrowest forms of neo-liberalism would have it that removing government from governance is somehow the solution. They claim that if interdependence and interaction between individuals and businesses is unregulated, ideas will blossom, business will boom and everyone will be better off. We are now seeing the tragic effects of that simplistic, anarchic ideology.

Examples of the extremes could be the centrally controlled command economies, such as North Korea and, on the other hand, societies in which government provides almost no physical or regulatory infrastructure or services, such as Somalia of recent years.

The more successful states treat "(E)conomic, social and political systems (as) evolving interrelated networks *within* society, not as separate systems" (Dimitrov and Kopra 1998, 128). Civil society, the Market sector and the State are treated as parts of an integrated whole.

There is enormous complexity in the relationships between the different parts of a society like UK. Institutions and interests cumulatively and collectively contribute to innovation. Innovation in turn contributes to employment, balance of payments and new investment. It generates new products & services, new jobs, national income and capital for new investment.

Democracy[6] facilitates and supports interaction between agents and enables those interactions to be regulated so as to limit dominance of any sector over another. The evidence that a famine has never occurred in a democracy (Sen 2001, 161ff) provides support for superior outcomes according to a key indicator. Sen comments on the decidedly undemocratic factors behind the Irish potato famine in support of his argument.

Commenting on recent experience in Northern Ireland, Meehan points out that:

... throughout the period of conflict and during the lead up to the (Good Friday) Agreement, networks of voluntary and community associations and the 'social partners' of business and trade unions negotiated the politics of everyday life with non-elected, locally based officials and, increasingly, officials in the EU (1999, 28).

This example highlights the self-organising capacity of complex systems. This has been summarised as:

Emergence is a manifestation of a unique *self-organizing ability* of complex systems - its study, modelling and practical application are at the focus of the theory of Complexity. According to this theory, complex systems evolve into self-organized forms in the absence of external constraints (pressures). When driven by a constant supply of energy, they are unavoidably pulled towards critical states where avalanches of changes occur.

Emergence brings forth complex dynamic patterns of order - *strange attractors*, underlying chaotic systems behaviour - patterns whose forms and dynamics are at the focus of the theory of Chaos (Dimitrov 1999a).

The interdependence of the members of socio-political systems is central to the functioning of these systems. Dimitrov and Kopra state that "(S)ocial complexity is strongly influenced by the paradox of interdependency: It is only when social and ecological dependencies are established that the interdependence emerges, and it is this collective interdependence (between people and between people and their environment) that provides the notion of individual independence with meaning" (Dimitrov and Kopra 1998, 118). They propose a rule that:

IF *there is interdependence between A and B*

AND *their relationship is one of a high enough degree of trust, mutual understanding and tolerance*

THEN *both A and B are able to act quite independently.* (Dimitrov and Kopra 1998, 119).

Dimitrov and Kopra go on to suggest that consensus is a false ideal, which may actually limit the capacity of a system to innovate and adapt. Rather, they say that again it is the process which is important because of its potential for emergent solutions. They write:

'dissensus' ... operates in consensus seeking enterprise, permanently implanting chaotic vibrations in the process of communication ... gives birth to an emerging order in the form of a new type of dynamic consensus between stakeholders: consensus for seeking a consensus (Dimitrov and Kopra 1998, 120).

It is in this area of uncertainty, in which agents are prepared to trust each other to work together notwithstanding unresolved differences, that innovation is emergent. Dimitrov also makes the point that the very fact of variations in the definitions of the meaning of words introduces a degree of uncertainty and dynamism into interactions that may stimulate innovation (Dimitrov 1999b). New understanding is emergent from this interaction - contest - between alternative meanings.

The beneficial effect of such contests of ideas is again reflected in Dimitrov and Kopra's approach to competition. They argue that:

... competition and cooperation should be considered not as mutually exclusive characteristics, but as complementary. In the process of individual, social, economic and political progression, the role of competition can be compared to that of dialogue in the development of ideas, learning and innovation. But these processes have to take place in a framework in which the participants see each other not only as competitors but also, in the larger scheme of things, as partners in cooperation (Dimitrov and Kopra 1998, 127).

Characteristics of Interactions

The role of cultural norms, which express themselves as informal rules of behaviour, is central to the manner in which governance operates. As Sen puts it:

> The need for institutional developments has some clear connections with the role of codes of behaviour, since institutions based on interpersonal arrangements and shared understandings operate on a basis of common behaviour patterns, mutual trust and confidence in the other party's ethics. The reliance on rules of behaviour may typically be implicit rather than explicit - indeed so implicit that that its importance can easily be overlooked in situations where such confidence is not problematic. But wherever it *is* problematic, overlooking the need for it can be quite disastrous (2001, 265).

These observations highlight the significance of the nature of interactions in the real world of mankind. Jervis (1997) has described a wide range of interactions which commonly conform to certain psychological patterns which are susceptible to definition and prediction to varying degrees. He has derived these mostly from observations in international relations.

The patterns which Jervis observes are summarised in Figure 11. Some of the more significant observations include: two or more agents produce results which cannot be understood by examining each alone; the effect of an agent's policy or strategy depends on those adopted by other agents; agents' behaviours alter the policy environment in ways that affect the outcomes of their policies and thus the environment; change to the environment may stimulate new agents to emerge and influence that policy environment; and, feedback may be positive, amplifying pressures for further change, or negative and dampening to tend towards restoring the pre-existing stability (Jervis 1997).

The interactions are influenced by cultural norms, power relationships, legislation and a range of other factors. Interactions may produce immediate effects, or observable effects may be delayed. There may be considerable discretion available in response times, and responses may be suppressed or exaggerated (there may be positive or negative feedback, in Jervis' terms).
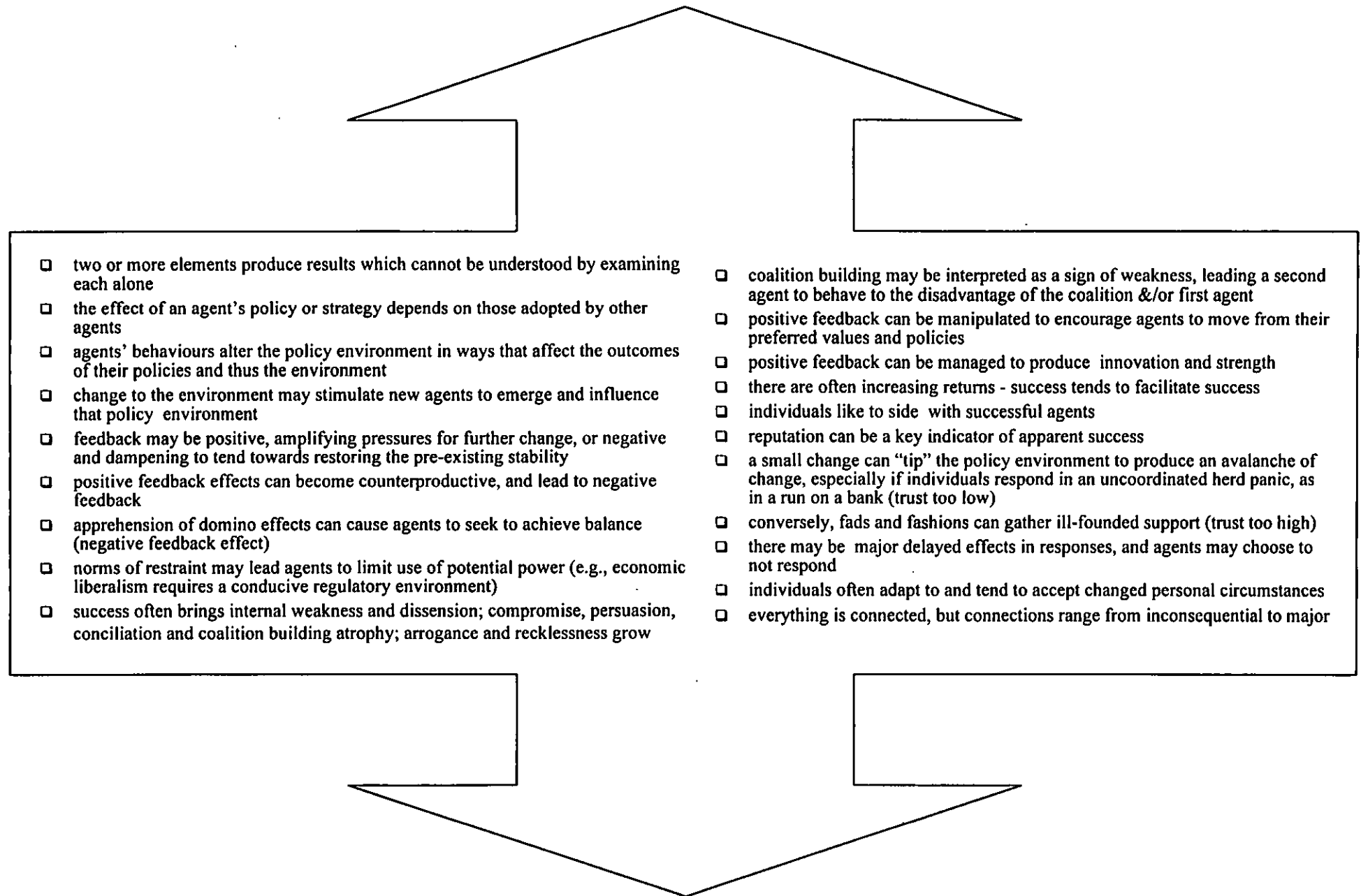
- two or more elements produce results which cannot be understood by examining each alone
- the effect of an agent's policy or strategy depends on those adopted by other agents
- agents' behaviours alter the policy environment in ways that affect the outcomes of their policies and thus the environment
- change to the environment may stimulate new agents to emerge and influence that policy environment
- feedback may be positive, amplifying pressures for further change, or negative and dampening to tend towards restoring the pre-existing stability
- positive feedback effects can become counterproductive, and lead to negative feedback
- apprehension of domino effects can cause agents to seek to achieve balance (negative feedback effect)
- norms of restraint may lead agents to limit use of potential power (e.g., economic liberalism requires a conducive regulatory environment)
- success often brings internal weakness and dissension; compromise, persuasion, conciliation and coalition building atrophy; arrogance and recklessness grow

- coalition building may be interpreted as a sign of weakness, leading a second agent to behave to the disadvantage of the coalition &/or first agent
- positive feedback can be manipulated to encourage agents to move from their preferred values and policies
- positive feedback can be managed to produce innovation and strength
- there are often increasing returns - success tends to facilitate success
- individuals like to side with successful agents
- reputation can be a key indicator of apparent success
- a small change can "tip" the policy environment to produce an avalanche of change, especially if individuals respond in an uncoordinated herd panic, as in a run on a bank (trust too low)
- conversely, fads and fashions can gather ill-founded support (trust too high)
- there may be major delayed effects in responses, and agents may choose to not respond
- individuals often adapt to and tend to accept changed personal circumstances
- everything is connected, but connections range from inconsequential to major

Figure 11: Factors which can Affect Responses by Agents and Consequently the Behaviour of a Complex System

Dynamic Interaction

This model may be compared to the policy network model. Policy networks function according to

> a theory of power-dependence which contains five propositions: any organisation is *dependent* upon other organisations for *resources*; in order to achieve their *goals* the organisations have to exchange resources; although decision-making within the organisation is constrained by other organisations, the *dominant coalition* retains some discretion. The *appreciative system* of the dominant coalition influences which relationships are seen as a problem and which resources will be sought; the dominant coalition employs strategies within known *rules of the game* to regulate the *process of exchange*; and variations in the degree of *discretion* are a product of the goals and the relative power potential of interacting organisations. This relative power potential is a product of the resources of each organisation, the rules of the game and of the process of exchange between organisations (Rhodes 1997, 40-53).

Policy networks depend on "trust and interdependence", based on "shared values and norms" constantly reinforced through dialogue ("diplomacy"), for the successful delivery of policy outcomes (Rhodes 1997, 40-53).

However, in the fuzzy logic, interactive model, the agents, which may be differentiated and include specialist functions such as accountability agents, are constantly interacting with each other, assessing feedback and the conduct and performance of each other, responding by modifying their own actions, performance and conduct accordingly and again re-assessing and responding. The model accepts that interactions are less certain and predictable than the conventional policy network model may suggest to be the case.

Figure 12 introduces the complexities that can arise when a number of inconsistent factors may affect a single interaction. The presence of these factors affecting an interaction creates advantages in the application of fuzzy logic in order to arrive at a "best fit" action on the part of an agent. Agents with greater power or influence could bias the outcome in their own interests to the disadvantage of the vulnerable agents or the system as a whole. The concept of "best fit" solutions could therefore discriminate severely between some agents if allowed to operate in a laissez faire manner. The outcomes of decisions are crucially dependent on the factors affecting decision-making.

action
affecting
other agent/s

moderate probability of
beneficial response

uncertain
response; possible
disadvantage

extraneous
influence

strong
probability of
beneficial
response

**Figure 12: Many Actions are Subject to Estimates of Several Factors which may affect
Probable Responses**

The outcome of interactions may be simple and represent choices between a small number of alternatives, or they may arise from the interplay of a complex set of factors. The complexity of a set of factors may reflect incomplete knowledge, the impracticality of obtaining complete knowledge or an unpredictable environment in which there are variables which continue to change, perhaps due to the influence of further unknown or unknowable variables (e.g., market forces).

Zadeh states that:

> (A)s the complexity of a system increases, our ability to make precise and specific statements about its behaviour diminishes until a threshold is reached beyond which precision and significance (or relevance) become almost mutually exclusive characteristics ... A corollary principle may be stated succinctly as, 'The closer one looks at a real-world problem, the fuzzier becomes its solution' (Zadeh in Duignan 1998, 4; see Smithson 1996 for a discussion of the forms which ignorance may take and how it may be addressed in management).

The agents make judgements and negotiate, applying fuzzy logic. Fuzzy logic "... recognises that the world is full of uncertainty ambiguity, contradictions, vagueness"(Duignan 1998, 4) and is useful as "... a way of thinking that is responsive to human zeal to unveil uncertainty and deal with social paradoxes emerging from it" (Reznik, Dimitrov and Kacprzyk 1998, IX). Its framework

> ... enables problems to be approached in their wholeness, without imposing needless premature reduction nor risking becoming lost in their complexity. We consider it is useful to approach such situations without seeking exactness (as is often presumed to result from a reductionist approach) and to remind ourselves that often only approximations are possible (Woog, Dimitrov and Kuhn-White 1998, 107).

However, it is important to recognise that fuzzy logic leads to "best fit" solutions, which may not be optimum in respect of any particular criterion or every criterion.

The operation of fuzzy logic will be dependent on the interplay of a range of factors. Its outcomes will be affected by the extent to which there are shared trust, culture, values, objectives, processes, norms of behaviour and formal rules of procedure (codes of conduct, regulations, etc).

Fukuyama has explained the importance of the "radius of trust", in which the extent to which trust is extended to remote agents is a key component of social capital affecting the operation of complex systems (Fukuyama 1999, 52).

A consistent and constantly reinforced set of social values is crucial. Wheatley has stated that "we need to be able to trust that something as simple as a clear core of values and vision, kept in motion through continuous dialogue, can lead to order" (Wheatley, cited in Duignan 1998, 20).

Accordingly, superior outcomes are more likely where there is trust, willingness or desire to reach agreement, a shared culture, consistent values, compatible objectives, norms of behaviour in common, agreed processes (e.g., formal rules of procedure including codes of conduct, regulations, etc), rules of procedure providing basic infrastructure for interaction, rules of procedure allowing flexibility, similar bargaining power amongst agents and fully informed agents.

These points are illustrated in Figure 13. They are consistent with the evidence of complexity theory which suggests that the establishment of a moderate regulatory infrastructure is important in achieving optimum outcomes for the system as a whole. A system in which there is merely the facilitation of decision-emergence may be so anarchic as to result in chaos, whereas the objective is to maintain the system at the transition phase between chaos and order, in so far as is possible (Kaufmann 1991). Similarly, if it is desired to meet certain social objectives, such as equal civil and political rights for women or conformity with the principles espoused in Rawls theory of justice (Rawls 1989), factors must be incorporated which are orientated towards that objective. Such objectives may or may not be consistent with optimum outcomes, according to certain criteria, for the entire system as a whole.

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Thus, the "best fit" actions by the individual agent are influenced, guided or even directed by the design of the regulatory infrastructure within which decisions are made.
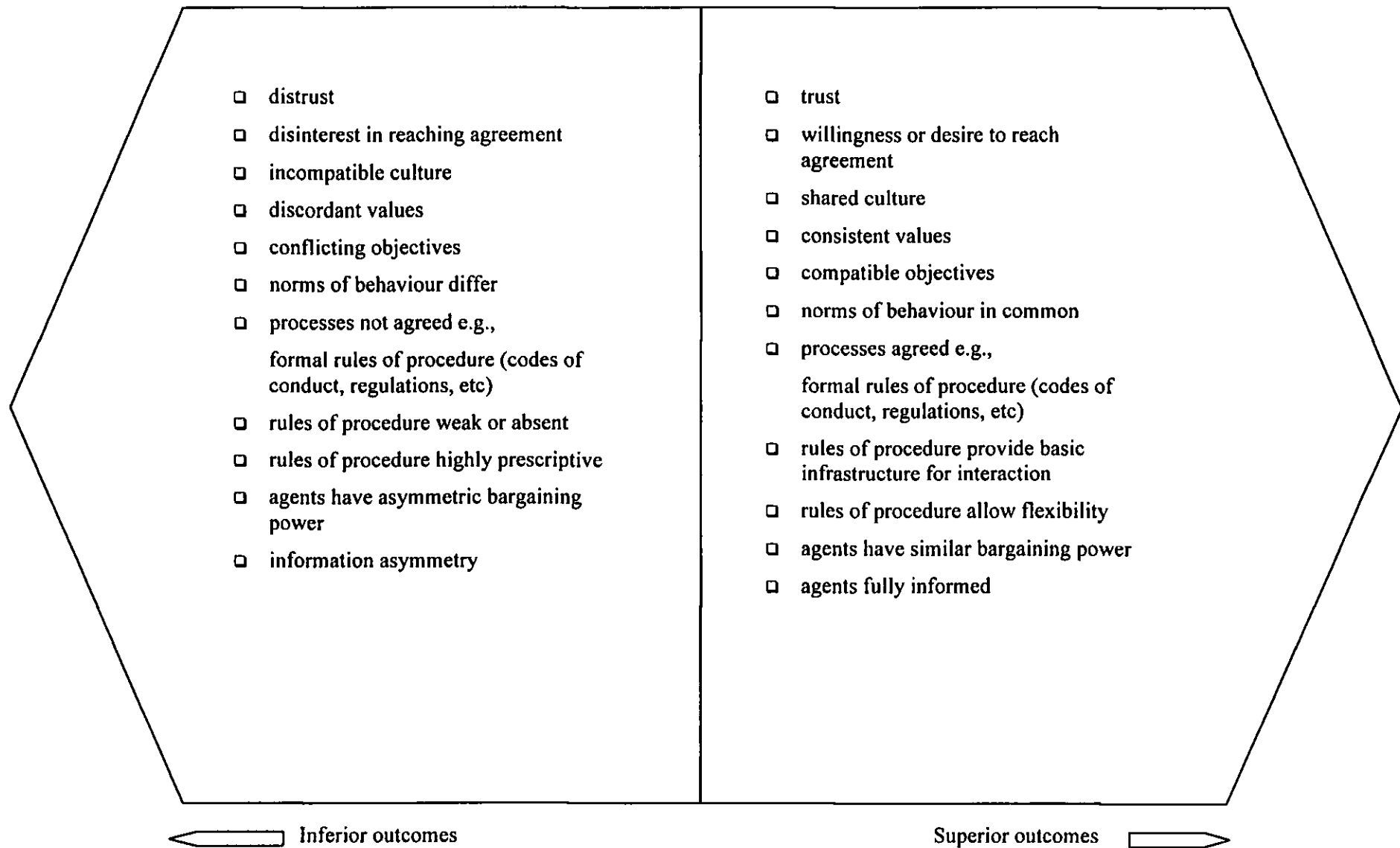
	distrust		trust
	disinterest in reaching agreement		willingness or desire to reach agreement
	incompatible culture		shared culture
	discordant values		consistent values
	conflicting objectives		compatible objectives
	norms of behaviour differ		norms of behaviour in common
	processes not agreed e.g.,		processes agreed e.g.,

- ❑ distrust
- ❑ disinterest in reaching agreement
- ❑ incompatible culture
- ❑ discordant values
- ❑ conflicting objectives
- ❑ norms of behaviour differ
- ❑ processes not agreed e.g.,

  formal rules of procedure (codes of conduct, regulations, etc)
- ❑ rules of procedure weak or absent
- ❑ rules of procedure highly prescriptive
- ❑ agents have asymmetric bargaining power
- ❑ information asymmetry

- ❑ trust
- ❑ willingness or desire to reach agreement
- ❑ shared culture
- ❑ consistent values
- ❑ compatible objectives
- ❑ norms of behaviour in common
- ❑ processes agreed e.g.,

  formal rules of procedure (codes of conduct, regulations, etc)
- ❑ rules of procedure provide basic infrastructure for interaction
- ❑ rules of procedure allow flexibility
- ❑ agents have similar bargaining power
- ❑ agents fully informed

◁ Inferior outcomes

Superior outcomes ▷

Figure 13: Factors in Interactions between Agents affecting the Outcome for the Complex Adaptive Socio-Political System

Learning from Corporate Governance

The importance of the interactions and interdependencies of agents within a system is now coming to be recognised in corporate governance. Cause and effect linkages are frequently found to be far weaker than assumed by management, and the outcomes in the complex market place often unpredicted. Pascale (1999) has reported on the experience of the petroleum giant, Shell, in which traditional corporate top-down management has been rejected as "mechanistic". The corporation has embraced governance heavily reliant on the lessons of the theory of complex adaptive systems. Shell has recognised the potential to foster innovation and adaptation to the rapidly changing environments in which many businesses must operate. Rather than impose centralised controls, Shell actively facilitates employee involvement within an overall framework established by the corporate leadership.

Thus, rather than deregulating (as it may be expressed in New Public Management terms) Shell's reforms may actually have resulted in "more controls but in a different fashion" (Miller quoted in Pascale 1999, 94). This observation is redolent of the concept of the *regulation of self regulation* attributed to Teubner (1983). Also writing in the corporate governance discipline, Beinhocker (1999) has provided a more detailed exposition of the theory of the operation of complex adaptive systems. The difficulty of predicting behaviour in complex systems is explained by the *punctuated equilibrium* and *path dependence* that they feature.

> Punctuated equilibrium occurs when a system's behaviour is characterised by periods of relative quiescence interspersed with episodes of dramatic change. This means that occasional major upheavals ... are inherent in the dynamics of the system and not the result of some unusual external shock. Path dependence means that small, random changes at one point in time can lead to radically different outcomes down the road – something usually illustrated by the overused metaphor of a flapping butterfly causing a hurricane (Beinhocker 1999, 97; see also Bak 1996, Arthur 1994).

One of the implications of these characteristics is that it helps explain the unreliability of the human predilection to interpret new events according to apparent patterns in earlier events, from which heuristics, or rules of thumb, are derived and extrapolations made (Beinhocker 1997, 97; Holland et al 1986; Kahneman et al 1982).

Rather than behaving according to predictable mechanistic or linear formulas, complex systems exhibit non-linear characteristics and can be compared with evolutionary processes observed in biology. Business (and socio-political) systems, as with living systems, evolve through the dynamic interaction of strategies which are themselves the product of constant interactions between agents. These agents range from individuals, invariably interdependent with other individuals, to informal and formal groups, coalitions and institutions through which they affiliate or are represented. The environment in which they exist conditions the potential for strategies to evolve. A rigidly confined environment limits the capacity for interaction and evolution, as in nature. A totally unrestricted environment facilitates the evolution of multiple strategies. It is predicated on the assumption that resources are unrestricted and freely and equally accessible to all agents.

RESOURCE LIMITATIONS

If, however, resources are limited, as is almost invariably the case in the public management of a socio-political system, an unregulated environment has quite different outcomes. The direction of the evolution of strategies, policies and practices will be affected by access to scarce resources. If the environment is unregulated, then by default, one of the rules affecting the direction of evolution will be that which determines access to, or effective control of, scarce resources. In an unregulated environment, those agents with the greatest power enjoy greatest access to their preferred resources at the expense of more vulnerable agents. Thus if it is, for example, a fundamental principle of society that women are entitled to equal civil and political rights, then that preferred outcome requires that the environment be regulated to guide the behaviour of agents in the system accordingly.

Theoretical understandings of the functioning of complex adaptive systems, supported by empirical studies, have lead to several key design features for improved governance of business corporations being identified. These include constant striving for improvement (Collins and Porras 1994), *parallelism* in which multiple policies are adopted in parallel (Beinhocker 1999, 99) and mixing incremental changes with moderately and radically different changes (Baghai, Coley and White 1999; Baghai, Coley, Farmer and Sarrazin 1997).

This is in contrast with the clarion calls, of many New Public Management advocates, for private sector practices to be emulated (albeit not necessarily those reflected in the thinking above). Public management has not been noted for constantly striving for improvement and it has tended to preach uniformity of approach rather than the type of parallelism and mixture of measures advocated above, at least within jurisdictions. Variations do exist nonetheless, and those which develop between jurisdictions, especially within federations, achieve similar effects to some extent.

FEDERALISM

This paper does not attempt to address constitutional definitions of federations. Rather it treats the governance of the British community (united by, at the least, its shared sentiment for the territory of the England, Scotland, Wales and Northern Ireland) as a form of federalism. It is a form of federalism in the sense that power and decision-making are dispersed. They are dispersed between the State, Market and Civil Society sectors. They are also dispersed within the State sector, most obviously between Westminster and the Scottish, Welsh and (potentially) Northern Ireland nations.

There are a number of points to be briefly mentioned before proceeding to the main discussion. The first is that the potential for fragmentation of the State is not likely to be determined solely the stark alternatives of the dispersal of power or the suppression of self-determination in either the United Kingdom or elsewhere.

The second is that the cost of public administration does not appear to rise with the dispersal of political power. General government expenditure as % of GDP is as high or higher in the UK than in a number of federations. In the UK the most recent figure, for 1996, was 41.4%. For Switzerland it was 33.9%, USA 33.7% and Australia 34.8%. Canada was slightly higher at 42.8% (OECD 2001). Indeed, those statistics may suggest efficiencies can arise from the dispersal of power, possibly through reduced transaction costs.

Asymmetry

Much attention has been paid to asymmetry. It has been pointed out that various provisions constituting the Scottish, Welsh and Northern Ireland assemblies and executives differ in aspects ranging from fundamental powers to nomenclature. Amongst the issues raised have been that the provisions apply to relatively small proportions of the UK population overall and in each case, that they have not been uniform. Furthermore, extension of devolution to English regions has not advanced. Collectively, these varying rates, extents and forms of change have added complexity to UK constitutional arrangements (Hazell 2001, 269ff; Laffin and Thomas 1999, 89).

It is not clear that these issues are matters justifying concern. Assemmetry may result in the governance of the nations and of the UK overall being more adaptive and thus result in improved outcomes. This may arise if its design enables these national sections of the community to function according to their particular variants of values and culture. The imposition of uniform provisions may well stultify the emergence of ideas and actions peculiarly suited to the issues facing these jurisdictions.

Rather than lamenting the lack of uniformity, the question arises as to the appropriateness of the national model in each case. Do the provisions for each nation enable that jurisdiction to operate in accordance with its own values and culture, subject to consistency with the overall interests of the UK State?

In the case of Scotland, where a Constitutional Convention enabled the Scottish people to have a major influence on the design of governance, there is considerable autonomy without placing in jeopardy the

Union. This would appear to enable a high level of self organisation and the emergence of innovation and adaptation relevant to local circumstances.

Why has did this occur in Scotland? It appears to have been due, at least in part, to a continuing strongly distinctive Scottish culture that has been long reflected in electoral support for Scottish nationalism. This cultural identity facilitated the successful establishment of the Constitutional Convention and its productive outcomes.

The Northern Ireland case may reflect almost the reverse. National identity, values and culture remain strongly - at times violently - contested. Levels of trust between sections of the community and their leaders are low. Even attempts at creating an environment in which trust might develop and confidence grow have had a troubled history.

However, at the more local level within Northern Ireland, trust, cooperation, innovation and adaptation have occurred as Meehan has shown (2001, 28).

The Welsh case is somewhat intermediate. It had neither the strength of the shared sentiment amongst members of the community, particularly opinion leaders, present in Scotland, nor the schisms of Northern Ireland. It lacked a unifying national media and it had not had the experience of a constitutional convention process through which national identity could be debated and reconciled. The referendum was result far less decisive.

It is not surprising then that the first year of the National Assembly functioned as a constitutional convention, contributing to the development of shared sentiment and trust between members of the community within and without the National Assembly (Osmond 2001, 76-77).

The fact of the emergence of these specialist jurisdictions is consistent with the theory of complex adaptive systems. Whilst the decisions were political decisions made in accordance with democratic processes, those processes have operated as is to be expected of complex adaptive systems.

The manner and form in which these three cases have developed is very much as might have been predicted from Jervis' findings. Consider again the factors Jervis has associated with superior outcomes

- ❏ trust
- ❏ willingness or desire to reach agreement
- ❏ shared culture
- ❏ consistent values
- ❏ compatible objectives
- ❏ norms of behaviour in common
- ❏ processes agreed e.g., formal rules of procedure (codes of conduct, regulations, etc)
- ❏ rules of procedure provide basic infrastructure for interaction
- ❏ rules of procedure allow flexibility
- ❏ agents have similar bargaining power
- ❏ agents fully informed

Note that these factors are almost all "fuzzy". They do not lend themselves to prescription in constitutional or other legislation, precise definition, or measurement.

The extent to which these factors were present correlates closely with the extent to which each nation has achieved self-governance.

Accordingly, the assymmetry which has emerged is unsurprising. Some claim that the extent of assymmetry is of major concern. For example, Laffin and Thomas assert:

> Serious questions must be raised about whether the new inter-governmental mechanisms, such as the Joint Ministerial Committee, will be effective, given the severe asymmetries in the new system (2001, 89).

Significantly, Hazell quotes Ward as expressing serious reservations about the complexity of the emerging arrangements and their incomprehensibility to most citizens (Hazell 2001, 271). This is particularly interesting coming from a source in the United States where even fundamental voting rights vary between quite local areas!

The question remains as to whether this really matters. Neatness and simplicity in constitutional design have certain appeal, but so do flexibility and the responsiveness. It should not be forgotten that the operation of the constitution prior to the commencement of devolution, with its complex web of common law principles, conventions, documents and European Union provisions was already beyond the comprehension of most citizens. Nonetheless, there is little evidence that any significant proportion of the people had then or now have major dissatisfaction with the governance of the UK as it affects their daily lives.

The variability between parts of the Union may facilitate responsiveness to localised conditions, innovation and adaptation rather than confound them.

A number of policy announcements included in the Queens Speech and by the Prime Minister have demonstrated a commitment to devolving significant autonomy in the delivery of policy objectives. These have included initiatives as diverse as education, local council services and the Street Wardens scheme (Queens Speech 2001, 10 Downing Street 2001a, 10 Downing Street 2001b, 10 Downing Street 2001c). Each has provided for local initiative in designing the delivery of a national objective, rather than imposing a uniform model throughout England or the Union irrespective of local conditions.

FUZZY FEDERALISM

What is the reality of governance in the UK? Does it conform to the common models of clearly defined powers and hierarchical power relationships?

This paper suggests that UK governance actually operates as fuzzy federalism - a complex adaptive network in which relationships function according to fuzzy logic.

UK governance operates in an environment that is not in a steady state. Change is constant. For the individual citizens of the crowned republic, perceived needs change with stages in the individuals life cycle and may be affected by changes in her economic or other environment. At the broader regional level, her community may be affected by events such as flooding or the success of an adult literacy program. At the national level, Britons may be affected by factors as intangible of the public perceptions of quality national leadership and its effect of the confidence needed for a myriad of decisions influencing the lives of the citizens, by international issues such as violent conflicts in Yugoslavia and by universal issues such as global warming.

Good governance of the UK as a democratic polity requires that it be responsive to the perceived needs of the citizens. In being responsive, the continued stability and viability of the polity requires that responses be orientated to adaptation. Responsiveness that is not adaptive may undermine the integrity of the polity.

What then are the features of responsiveness that facilitate adaptation? Adaptation requires adjustment or change to accommodate differences in the environment. For simple issues, the adjustments will be simple. If there is an outbreak of foot and mouth disease, there is a very narrow range of available options and an abundance of experience and expert advice.

However, for more complex matters such as chronic unemployment in former coal mining valley in Wales, the "best fit" response is less clear cut. Known approaches and ideas have failed to resolve the problem. New ideas and new actions - innovations are required. For this and a myriad of issues like it, UK needs great adaptive capacity to accommodate and adjust to change. This adaptive capacity must be in public policy, not merely new technology. Policies and behaviour that assume steady-state government are poorly suited to providing that adaptive capacity.

It is this context that good governance would be endangered by contradictions between a desire by Whitehall for central control over events and the stifling impact of centralism on the innovation. Tuebner has shown that attempting to exercise control over complicated policy issues through regulatory control is ultimately self-defeating, in that the administrative complexity becomes an intolerable burden. He has observed that reflexive regulation, also described as the regulation of self-regulation, is both more efficient and more effective (Teubner 1983). Reflexive regulation provides for the State to establish the principles, such as performance standards, to be followed in a particular regulatory regime rather than laying down highly prescriptive requirements. Such an approach enables, and thereby may encourage, those subject to the regulatory regime to be innovative in meeting its objectives.

Thus by sharing power, government is able to stimulate greater responsiveness, higher levels of innovation and achieve improved adaptation by the community as a whole over its future. In that sense, by sharing power it gains power.

In the broader field of policy, sharing power has four major potential benefits. Firstly, it widens the ranges of sources of information, views and opinions that may contribute to the exchanges from which new ideas are emergent.

Secondly, arising from the wider sources of information that may be brought to bear, there are improved prospects of the anticipation of unintended consequences, whether desirable or undesirable (Sen 2001, 254-261).

Thirdly, the contributions of those most affected through self-interest or concern have greater opportunity of influencing the selection of emergent ideas, leading to a greater sense of ownership or commitment by those citizens to the adoption and implementation of the ideas.

Finally, as Straw recognised, decentralisation induces a "competition of ideas" which stimulates innovation and the emergence of new policies (Hazell 2000, 119). Whether through competition or contagion, sections of the community learn from and are stimulated by the ideas and successes of other sections.

What we observe is governance that it does not conform to conventional ideas of a unitary system in which the central institutions of the state are in total control. However, nor is it actually a federation with constitutional divisions of power. It is far fuzzier than commonly suggested by models of constitutions.

IMPLICATIONS FOR PARLIAMENT

The potential implications for governance of thinking of the system in this way can be seen by considering the example of the Parliament at Westminster. By putting to one side the issue of the indivisible sovereignty of the Parliament at Westminster and seeing the institution as a key rule maker and major influence in the governance of a complex adaptive socio-political system, it is possible to reconsider its roles and functions.

If it is accepted that governance will produce the best outcomes when there is a high level of interaction between, in this case, the institution and those with whom it is interdependent through its affects on policy and legislation, how may that be facilitated?

Three approaches may assist. The first is to adopt Teubner's entreaty to reflexive regulation. However, rather than using primary legislation to provide Ministers with enormous discretionary powers to be exercised through secondary legislation, primary legislation could set out principles, subject to which

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specific institutions or classes of institutions are empowered to create secondary legislation in accordance with appropriate democratic safeguards. In this model, it is appropriate that the Scottish Parliament, Welsh Assembly and, when functional, the Northern Ireland Assembly be empowered to create secondary legislation.

Secondly, to avoid the problems exposed in conduct of the Sandline inquiry by the House of Commons Foreign Affairs Committee (Polidano 2001) and the conflict of interest inherent in the establishment of inquiries by the Executive, the Parliament could appoint independent officers of the Parliament, akin to the Comptroller-General, with standing authority to investigate specified categories of matters.

Thirdly, the Parliament could greatly expand the opportunity for interaction between itself and the citizens. Amongst the ways of achieving this objective would be a much more active and inclusive role in the review of legislative proposals and secondary legislation.

DIRECTIONS FOR RESEARCH

Research to test this theoretical approach requires cases in which relationships between individual and institutional agents can be identified and the role and influence of fuzzy logic can be observed. My colleagues and I have used the example of the regulation of smoking by juveniles, reported in a paper presented on 15 August 2001. We have demonstrated the failure of both central regulation and self-regulation to address this major health issue and shown the significance of fuzzy logic in successful strategies. The paper also explores the application of neuro-fuzzy modelling in policy analysis (Petrovic-Lazarevic et al 2001).

The UK offers a rich variety of case studies to test the theoretical approach put forward in this paper. The diversity between regions and nations and between the approaches being taken in different policy fields would enable the selection of several distinctive cases through which the relationships between individual and institutional agents could be examined in detail. For example, a policy field involving extensive devolution and local diversity such as schools could be compared with a field in which the UK Government has retained much stronger central control, for example rail transport.

CONCLUSION

This paper has argued that the complexity of modern British society and the uncertain environments has lead to government operating according to a new approach to governance. It is now recognised that good governance is endangered by contradictions between the desire for central control over events and the negative impact of centralism on the innovation required to provide the responsive rule which is at the heart of democracy and which is necessary for adaptation to uncertainty and change. Approaching UK society as a decentralised complex adaptive system in which decisions and actions operate according to fuzzy logic rather than conventional constitutional models assists in a theoretical understanding of the governance of British society. Devolution and even asymmetry can be seen as positive developments assisting British society to respond, innovate and adapt more successfully to its internal and external environments.

Conceptualising the UK as a fuzzy federation can help us to see its true nature.

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ENDNOTES

[1] In this paper, a **community** is a group of people sharing common sentiments. It is comprised of members who are interdependent. It is organised and structured as a **society** (Nancy 1991). The delineation between community and society is to be distinguished from Tonnies' descriptions of *gemeinschaft* and *gesellschaft*. The former relates to community as small traditional social groups which rely for governance on informal "rules", whilst the latter are modern societies which rely on formal provisions (Fukuyama 1999).

[2] Agent is used in "the sense of someone who acts and brings about change, and whose achievements can be judged in terms of her own values and objectives, whether or not we assess them in terms of some external criteria as well" (Sen 2001, 19). Agents may be equated with stakeholders in the terminology of corporate governance.

[3] Whereas the political science and public administration fields are generally reliant on a literature variously described as discursive, narrative or verbal, complex adaptive systems theory (sometimes abbreviated as complexity theory), on the other hand, was developed by scholars in economics and sciences including a number expert in computer modelling and several Nobel Laureates, at the Santa Fe Institute, New Mexico. There is also an older European school that has developed from cybernetics (Heylighen 1996). Initially, the Santa Fe Institute aimed to generate new theoretical understandings of the operations of economic systems.

[4] Fuzzy logic is shorthand for a family of related theories arising from pioneering work by Zadeh. It is summarised in the brief outline which follows:

What is Fuzzy Logic?

Many decision-making and problem-solving tasks are too complex to be understood quantitatively, however, people succeed by using knowledge that is imprecise rather than precise. Fuzzy set theory, originally introduced by Lotfi Zadeh in the 1960's, resembles human reasoning in its use of approximate information and uncertainty to generate decisions. It was specifically designed to mathematically represent uncertainty and vagueness and provide formalized tools for dealing with the imprecision intrinsic to many problems. By contrast, traditional computing demands precision down to each bit. Since knowledge can be expressed in a more natural by using fuzzy sets, many engineering and decision problems can be greatly simplified.

Fuzzy set theory implements classes or groupings of data with boundaries that are not sharply defined (i.e., fuzzy). Any methodology or theory implementing "crisp" definitions such as classical set theory, arithmetic, and programming, may be "fuzzified" by generalizing the concept of a crisp set to a fuzzy set with blurred boundaries. The benefit of extending crisp theory and analysis methods to fuzzy techniques is the strength in solving real-world problems, which inevitably entail some degree of imprecision and noise in the variables and parameters measured and processed for the application. Accordingly, linguistic variables are a critical aspect of some fuzzy logic applications, where general terms such a "large," "medium," and "small" are each used to capture a range of numerical values. While similar to conventional quantization, fuzzy logic allows these stratified sets to overlap (e.g., a 85 kilogram man may be classified in both the "large" and "medium" categories, with varying degrees of belonging or membership to each group). Fuzzy set theory encompasses fuzzy logic, fuzzy arithmetic, fuzzy mathematical programming, fuzzy topology, fuzzy graph theory, and fuzzy data analysis, though the term fuzzy logic is often used to describe all of these.

Fuzzy logic emerged into the mainstream of information technology in the late 1980's and early 1990's. Fuzzy logic is a departure from classical Boolean logic in that it implements soft linguistic variables on a continuous range of truth values which allows intermediate values to be defined between conventional binary. It can often be considered a superset of Boolean or "crisp logic" in the way fuzzy set theory is a superset of conventional set theory. Since fuzzy logic can handle approximate information in a systematic way, it is ideal for controlling nonlinear systems and for modeling complex systems where an inexact

model exists or systems where ambiguity or vagueness is common. A typical fuzzy system consists of a rule base, membership functions, and an inference procedure. Today, fuzzy logic is found in a variety of control applications including chemical process control, manufacturing, and in such consumer products as washing machines, video cameras, and automobiles.

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URL: http://www.emsl.pnl.gov:2080/proj/neuron/fuzzy/what.html accessed 13 January 2000

[5] Good governance is "a system that is transparent, accountable, just, fair, democratic, participatory and responsive to people's needs" (World Conference on Governance, 1999)

[6] Democracy is "responsive rule", expressed more fully as the "necessary correspondence between acts of governance and the equally-weighted felt interests of citizens with respect to those acts" (Saward 468-469).

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