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# Exploring the Potential of Complexity Theory in Urban Regeneration Processes

Cletus Moobela

A Thesis Submitted in partial fulfilment of the requirements of
Sheffield Hallam University
for the Degree of Doctor of Philosophy

SHEFFIELD HALLAM UNIVERSITY
ADSETTS CENTRE

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## ABSTRACT

The research project was conceived out of a desire to explore the potential application of complexity theory in understanding urban regeneration processes. The science is still in its infancy, having been born out of a general milieu of, and paralleled, the dissatisfaction with the classical science approach to the problems of the world. At the heart of the complexity project is, therefore, the defiance of the reductionist paradigm in favour of holism and emphasis on emergent properties in the understanding of complex systems. As a new way of thinking and one that boasts of its ability to cut across disciplinary boundaries, the emerging science has found its maiden expression in many spheres of the social and physical inquiry – offering, in each case, potential solutions to the vexing problems and questions that have survived the test of time. In urban studies, such questions reside within the general thesis of the persistence of the urban problem in the midst of a myriad of theoretical tools and policies designed to secure a better understanding and tackle the problem. The translation of this promising theoretical platform into the study and the pursuit of the research agenda were conducted through the case study of the Hulme inner city area in Manchester. The task basically involved three phases of analysis. The first was a historical narrative that attempted to weigh the evolution of the Hulme regeneration processes between 1960 and 1990 against the characteristic features of complex systems, with the aim of establishing a case for conceptualisation of urban regeneration as a subject of complexity. Using selected analytical tools of social network analysis, the second phase sought to quantify the regeneration networks of Hulme so as to weigh them against the deprivation indices for the area between 1990 and 2000, with the aim of testing for any correlations and their implications in the complexity project. Though equally facilitated by social network analysis, the third level was more concerned about investigating the enabling environment for the evolution of urban regeneration networks than mere quantification of the network parameters. Put together, the three levels of analysis provided a framework that serves as a fundamental analytical framework for urban regeneration processes. It offers a much more robust, emergent based, holistic approach to urban regeneration than that which is

contained in many of the contemporary claims of holism. The study's emphasis on intervention without violation of natural (social) order does not only provide a (potentially) essential tool for analysis but also sheds light on questions of the appropriate institutional thickness that is desirable for innovation. Being an exploratory undertaking, the study does not purport to be an exhaustive account of the issues raised, especially that complexity theory is itself still an emerging phenomenon.

# Author's Declaration

I confirm that this thesis is the sole work of the author

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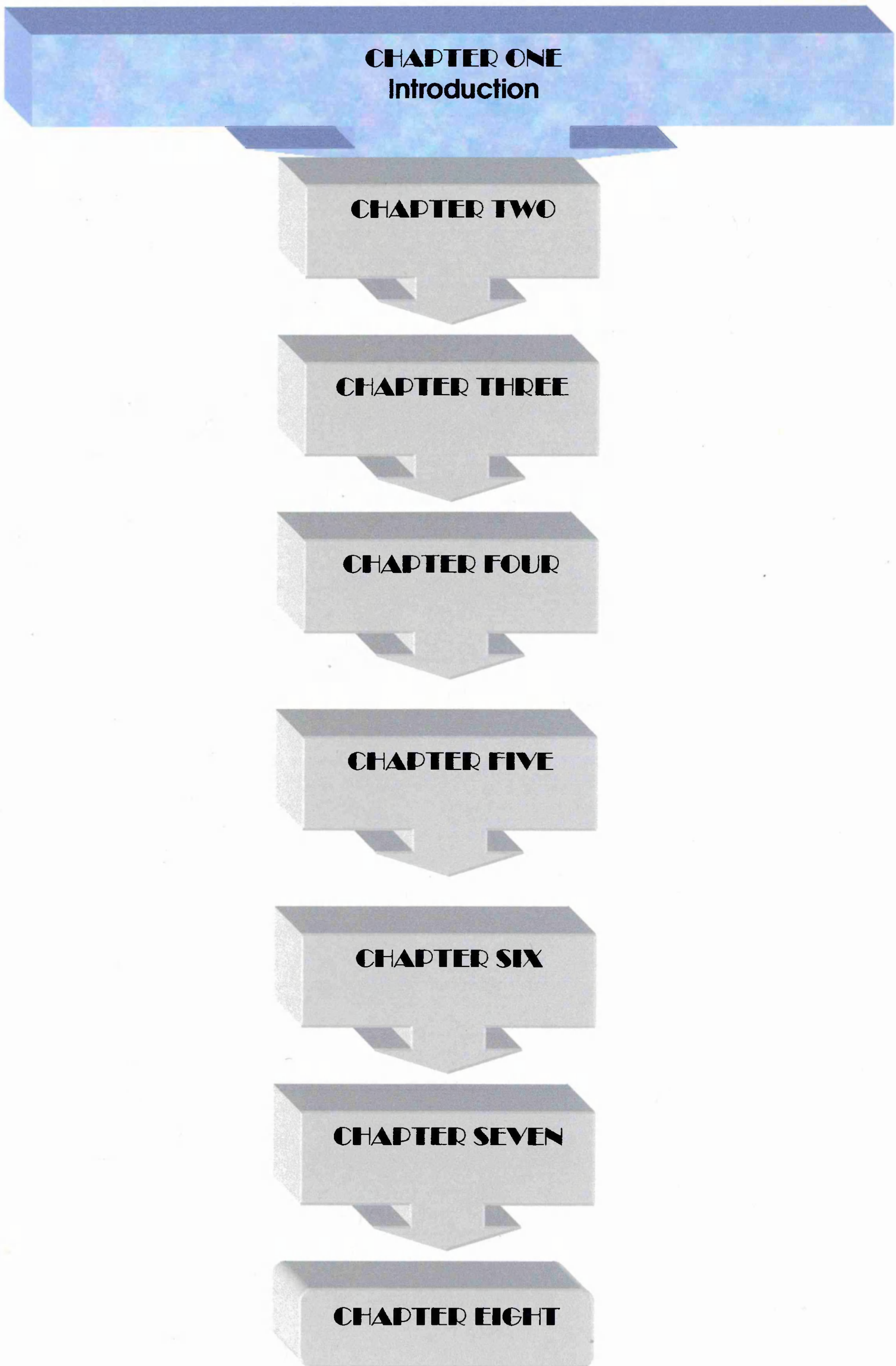
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# CHAPTER 1: INTRODUCTION

## 1.1 Introduction

It has almost become customary for many writers and commentators on complexity theory to prefix their studies with a contrast between the traditional and the emerging worldview approaches to research. The traditional or classical science approach is largely identified with the philosophical assumptions of reductionism, objective observation, entity as a unit of analysis, linear causation, and many other tools of analysis associated with the scientific method. The dominant goal of this positivist approach has been to predict (and ultimately control) the behaviour of systems not yet explored (but similar to those that have been studied), under conditions not yet extant and in time periods not yet experienced (Arrow, et al. 2000). Although many worldview assumptions still work well within a certain range of conditions, beyond that (where complexity begins) they no longer give us a reliable guide to the understanding of the real world. It is, therefore, imperative that new theories are found to replace the old ones, or rather, to extend them by improving the approximation (Dent, 1999). The complexity revolution and the postmodernist approach appear to have generally been endorsed as an alternative to the traditional worldview. This is because the dawn of complexity theory on the research scene has paralleled an increase in dissatisfaction with the traditional approach. Capra (1982) calls this dissatisfaction a crisis of perception and suggests that it occurs when people subscribe to a mental model that no longer achieves their standards of accuracy.

One of the welcome features of the emergence of complexity is its acclaimed ability to cut across disciplinary boundaries, offering potential answers to pertinent questions that have haunted "experts" and bureaucrats for a long time. In the field of urban studies, such questions have often revolved around the notoriety and reluctance of the urban system to be harnessed into our-own-made, control oriented predictive models. Despite the existence of copious volumes of literature on the subject (albeit based on the reductionist paradigm), there are still more questions than answers in the understanding of the urban system. Perhaps viewing the system through the lenses of the emerging science of complexity might give us a break- through. After all, even a cursory analysis of the intricacies of the urban system should reveal a compelling case for adopting complexity theory as a basis for understanding cities. That is why the main purpose of this research was to explore the potential of complexity theory in understanding cities in general and urban regeneration processes in particular.

The aim of this introductory chapter is to set the framework within which the research was conducted. The chapter is organised into seven main sections beginning with a general background to the research problem. This then leads to an outline of the research rationale in section 1.3, which, together with the general background, essentially serves as the preamble to the research. Section 1.4 offers a brief introduction to the science of complexity, with the sole purpose of putting into context the research aims and objectives, which are outlined in section 1.5. Section 1.6 is a research originality note that makes reference to past research perceived to have taken a similar line of thought as the main arguments in this research with a view to providing a basis for judging the contribution of the research to the body of knowledge in chapter eight. The penultimate section (1.7) is no more than a statement on the nature and source of the methodological tools employed in the research to pursue the aims and objectives. Finally, section 1.8 provides a guided tour of the dissertation in the form of a chapter outline.

## 1.2 Background: Origins of Britain's urban problem

Mankind's rise from the doldrums of the primordial village-based and nomadic *modus viviendi* to urban civilisation took tens of thousands of years. However, ever since the first true cities arose, sometime between 4000 and 3000 BC, the influence of city-based cultures and steady increase of urban populations around the world have taken the centre stage of human history (Le Gates and Stout, 2000). From the Hellenic Athens and Classical Rome, to Renaissance Florence and Georgian London, history is replete with examples of towns and cities, which describe the best of urban tradition (Rogers, 1999). These cities inspired generations in terms of designs, economic strengths and cultural diversity.

The legacy of the beautiful cities, as the pinnacle of human endeavour (Lawless and Raban, 1986), is however overshadowed by the harsh realities of more recent history, which has been dominated by a severance in the relationship between people and place. In its painstaking account of the origins of the urban problem in Britain, the report of the Urban Task Force of Rogers (1999) suggests that English cities have paid a particularly heavy price for spearheading the Industrial Revolution. The industrial city, with its pollution, its slums and its short-term vision, destroyed our confidence in the ability of the city to perform its civic role. It appears that the city is now torn between two forces. On one hand, the 19th and 20th century visionaries like Ebenezer Howard and his exponents have advocated for an escape from the city through the Garden City movement. On the other hand, the writings and the influence of William Morris, John Ruskin and a host of others have cherished the idea of re-establishing contact with the familiar landmarks of a lost pre-industrial order and innocence, which still influences people's attitudes towards towns and cities today (ibid). These two titanic forces, coupled with numerous associated and unpredictable factors, have been translated into a general process of urban decline at the centres and expansion at the periphery of towns and cities, which began at the turn of the 20th century and continues to date. With many towns and cities continuing to decay at an exponential rate (ibid), it is evident that the Industrial Revolution, together with more recent economic upheavals, has left an urban legacy littered with derelict buildings and empty sites. Towns and cities continue to exhibit all the hallmarks of social polarisation and social exclusion, including high levels of unemployment, homelessness, high levels of crime, and poor housing and environmental conditions. The planning system has continually succumbed to the dictations of market forces and generally appears to have failed to harness the city in its diversity. As long as the bridge between the urban problem and urban sustainability remains rickety, the search for theoretical foundations upon which to understand the system will never end.

This piece of research is one in many testimonies to that desire to continue searching, as expressed in the research rationale.

## 1.3 Rationale for the research

The need for continued research in the general field of urban regeneration cannot be over emphasised. It primarily stems from the bleak picture of the urban system painted by the after-effect of the Industrial Revolution and its associated problems as outlined above. The secondary set of reasons for continued inquiry into the subject derive from the persistence of the urban problem; challenges posed by the city as a multidimensional and dynamic system; and failure of past programmes and theories in this regard. Even land use planners have now started to pose such questions as:

> "Why is it that however well we plan, things still turn out to be different from what we expected? Why are we left with so many planning disasters, from car-choked cities to homeless young people? And why, no matter how hard we try or no matter how inclusive a process we attempt, are people left feeling isolated and frustrated at the system?" (Allmendinger, 1999: 255).

Allmendinger suggests that the answer to all these questions is that they involve complexity, and this study generally upholds this fundamental argument, as will become evident in the remainder of the report.

The search for theories upon which to understand urban regeneration programmes is hurdled by two immediate problems (Roberts, et. al, 2000). The first is the lack of a commonly accepted theory that is capable of capturing the entire range of issues related to the occurrence and outcome of urban change. The second is the existence of different views as to what constitutes the scope and practice of urban regeneration. Most explanations of urban regeneration begin their analyses by considering a single factor (reductionism!) and then seeking to broaden the scope by making reference to urban change rather than the underlying drivers of change. The net result is that many theories of urban change (see chapter 3) only provide a partial insight into what is otherwise a complex process. Many a time, these theories fail to articulate the connections among the different components of the regeneration processes. The different elements are often grouped together in an illusory way (Campbell, 2001). This piece of work proposes complexity theory as a potential foundation upon which to understand urban regeneration processes. In order to put the research aims and objectives into context, a brief introduction to complexity theory is appropriate here, although this is given a more detailed account in a conceptual exposition in chapter 2.

## 1.4 Introducing complexity theory

As a label of scientific (including social) interest area, complexity generally refers to the study of systems with many interacting components. It is an interdisciplinary science which embraces chaos theory and is centred on the understanding of self-organising systems composed of many interacting components that create patterns at ever increasing scales of complexity (McMillan, 2001). These self-organising complex systems are, therefore, characterised by multiple interacting agents, spontaneous self-organisation, adaptation/co-evolution and dynamism. Central to this piece of work is the attribute of self-organisation, which is the ability of the system to spontaneously organise itself in response to the activities in its environment. This ability is a product of the very richness of the interactions among agents. It is held that self-organisation and maximum innovation occur at the “edge of chaos”, a special kind of balance between the forces of order and those of chaos.

To understand the edge of chaos hypothesis, a simple illustration involving solids and liquids is given by Waldrop, 1992. In solids, atoms are locked into place, while in liquids they tumble over one another at random. However, right in between the two extremes, at a kind of abstract phase transition called the 'edge of chaos' you also find complexity - representing a class of behaviours in which the components of the system never quite lock into place and never quite dissolve into turbulence either. These are systems capable of being organised to perform complex computations, to react to the world, to be spontaneous, adaptive and alive.

The edge of chaos hypothesis appears to be a good starting point for exploring the potential of complexity theory in understanding urban regeneration processes. If we started from a consensual premise that this abstract phase transition is where complex systems should be in order to solve complex problems (Waldrop, 1992), our major challenge will be how to get the (urban) system to that edge. But are we actually able to do this? Unfortunately the answer is in the negative, since the edge of chaos is constantly changing and possibly unpredictable. While planners may think that they have foresight beyond others in planning for the system, the fact is that an emergent system is far better placed to identify a balance that will keep the whole complex adaptive system on the edge of chaos (Allmendinger, 1999). Our role as urban regeneration policy-makers is rather reduced to that of availing conditions necessary for the system to emerge. The immediate task, therefore, is to investigate what these enabling conditions are and how they can be created. This basically entails understanding the interaction of the various agents involved in urban regeneration processes and how such connectivity evolves. How we proceed in such a task was part of the agenda for inquiry in the research.

## 1.5 Research aim, objectives and hypothesis

The aim of the research was to consider the application of complexity theory as a potential basis for analysing urban regeneration processes. To achieve this aim, the specific objectives were threefold:

1) To investigate the implications of central control on decision-making in urban regeneration processes.

2) To assess the evolution of social connectivity and how this relates to the outcomes of urban regeneration processes.

3) To investigate the nature of existing social networks among the various agents of urban regeneration and the conditions under which such connectivity thrives.

The research sought to test the hypothesis that decision-making in urban regeneration is more of a subject of emergence than a necessarily planned process. This obviously poses a great challenge to the conventional planning and urban policy-making processes and invites a horde of issues to that effect. Pursuance of these issues can be summarised into a single three-in-one research question: When plans are conceived for urban regeneration programmes, is the resulting situation a product of: design? accident? or complexity? These research questions together with their parent aim, objectives and hypotheses form the axis around which the research revolved. Although the tone of the research hypothesis assumes that of a general statement, it is important to stress from the onset that this was a case study based research that does not claim any universality in terms of its findings and conclusions. This issue is taken further in the discussion of the study limitations in chapter eight. The next part of the chapter takes a swipe at what other researchers have said or done on the broad subject?

## 1.6 Research originality

The thesis of the research hinges on the conceptualisation of urban regeneration as a complex self organising system. Although the view that cities in general are self-organising systems is hardly new, the research dimension of this notion is relatively limited. This study benefited from the contributions of recent research, notably Martinez's (2001) regional networks for economic development, Green's (2001) East End artists agglomeration, and Gillies' (1999) industrial networks.

In the study of regional networks for economic development in the Hunter valley (Australia) and Leon province (Spain), Martinez used social network analysis to uncover collaborative networks in regions suffering from industrial dislocation. Although her work had no recourse to complexity theory, the use of robust social network analysis made it a powerful tool for analysing connectivity within industrial networks. The major drawback in this quantitative analysis was the timescale of two years (1997 – 1998), which was rather too short to accommodate the dynamics of an evolving system. A more elaborate approach in this regard is perhaps that of Green (2001) who conceptualised the evolution of artists in London's East End as a complex adaptive system. He used a pure historical narrative to investigate the complex adaptive capability of the East End artists' agglomeration, coupled with an unsuccessful attempt to engage social network analysis. The main lesson from his work can therefore be narrowed down to the virtues of using history to understand systems. This technique was earlier employed by Putnam (2000) in his study of the collapse of the American community and the associated impact on the socio-economic lives of Americans. Using mainly archival records, Putnam was able to unearth the civic-ness of the American community over a timescale of circa 50 years. This time factor is essentially missing in Gillies' (1999) research on the adaptability of industrial networks in the Italian district of Prato. However, unlike Martinez's work, her research was more inclined towards theory building and modelling than an empirically based study of industrial networks.

This piece of work drew lessons from the above recent studies. The tools of social network analysis, historical narrative, and archival records (for data collection) were all employed in the research. However, there are certain pockets of "structural holes" in these studies that the research built on, apart from having a unique direction of its own in urban regeneration and decision-making. Indeed, no such complexity research has been carried out in the field of urban regeneration, at least to the extent of this researcher's literature review. The overall contribution of the research to the body of knowledge is highlighted at the end of the report in chapter eight.

## 1.7 Research methodology

The research methodology heavily relied on the tools of social network analysis. This is because social network analysis and complexity theory share many common elements, especially the emphasis on emergent behaviour and the value of connectivity in social systems. Using social network analysis, it is possible to uncover the patterning of interaction within a social system. Analysts now believe that the success or failure of societies and organisations is a function of the patterning of their internal structure. The organisation of social relations, therefore, is a central concept in analysing the structural properties of the networks within which individual actors are embedded, and for detecting emergent social phenomena that have no existence at the individual level. This is perfectly attuned with complexity theory, where it is argued that regardless of how they are defined, each constituent agent of a complex adaptive system finds itself in an environment which is a product of its interaction with other agents in the system.

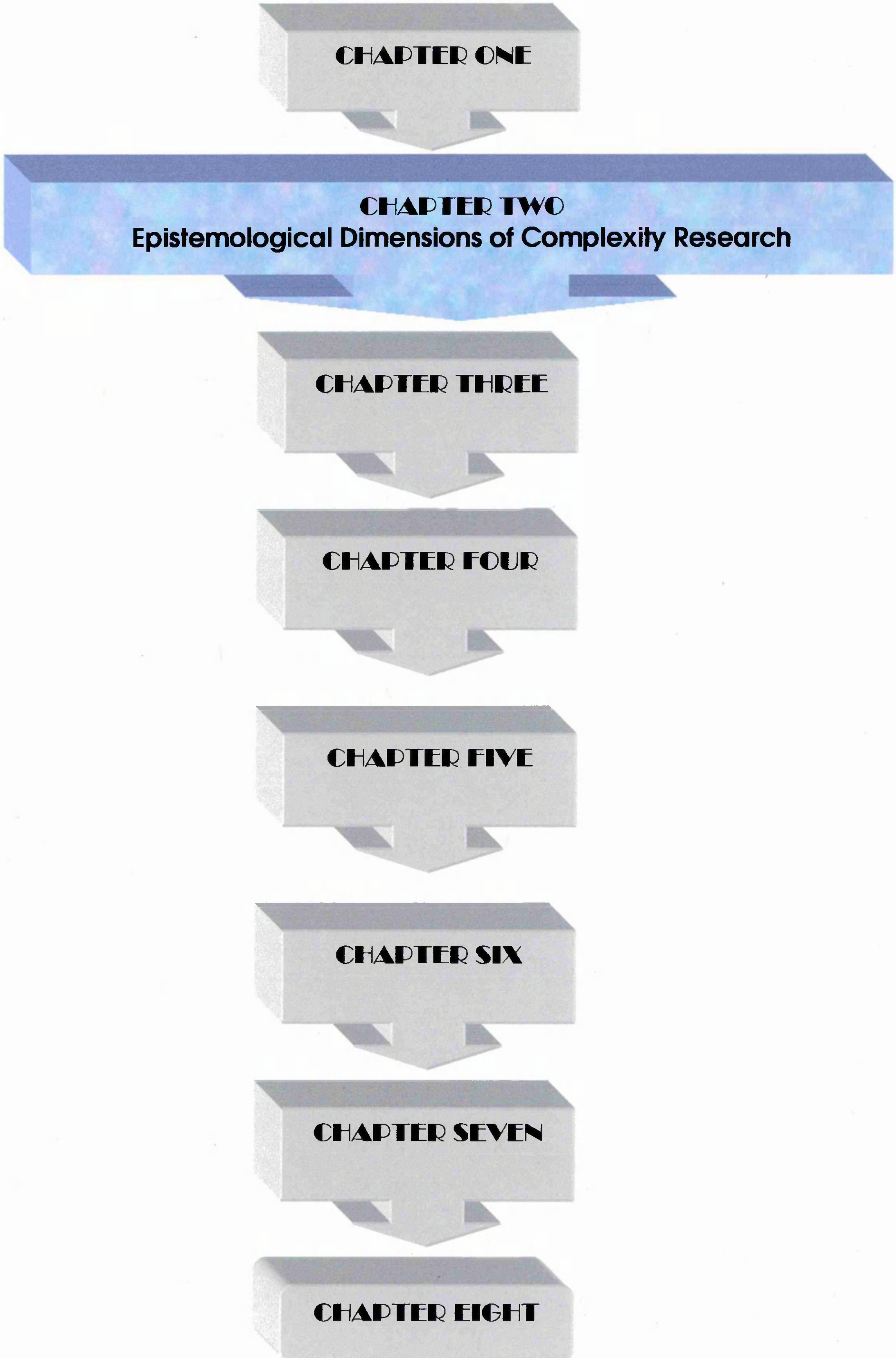
The task in the research approach was to uncover the dynamics inherent in the urban regeneration processes and to investigate the extent to which and / or whether these fit into the complexity project. The first of the three research objectives was pursued through mainly a historical narrative that tested for the extent to which urban regeneration processes can be conceptualised as complex systems. The second objective relied on the tools of social network analysis to relate network parameters to the outcomes of urban regeneration at various times. The source of relational data was mainly in the form of archival records. The third objective equally made use of social network analysis to uncover network structure and to investigate the enabling environment for the emergence of such networks. The data for this last objective was collected by way of internet and paper-based questionnaires to the agents of regeneration. These two sets of primary and secondary data were then pooled together to arrive at a systematic qualitative and quantitative analysis of the research aims and objectives. A more detailed discussion of the research methodology is given in the methodological framework in chapter five.

## 1.8 Structure of the dissertation

The thesis is organised into four main phases and eight chapters. The first part is an introduction and consists of chapter 1. The second is a literature review and consists of chapters 2 to 4. The third phase is a methodological framework accounting for chapter 5. The last phase, consisting of chapters 6, 7 and 8, deals with the research findings and critical reflections. In terms of individual chapters, the first is an introduction that sets out the aims and objectives of the research. Chapter two is about the environment of social research enquiry. Key philosophical underpinnings of complexity research are discussed so as to put the adopted research approach into perspective. The chapter also discusses a selection of the application tests of complexity theory especially in organisational settings. The third chapter constitutes a conceptual and theoretical framework. The chapter begins by analysing past and contemporary theories of urban change, before exploring the potential of complexity theory in urban studies in general and decision-making in urban regeneration in particular. Chapter four is an analysis of the evolution of urban regeneration processes in Britain with a view to identifying their natural place in complexity theory. This lays a firm foundation upon which to examine the evolution of urban regeneration processes in the case study area of Hulme, Manchester in the sixth chapter. Chapter five presents the methodological framework within which the research was carried out. It also spells out the tools of analysis that were employed. Since the methodology is largely based on social network analysis, an introduction to social network analysis is also given in this chapter. The seventh chapter presents the research findings together with analysis and discussion. Finally, chapter eight consists of a summary, conclusions and recommendations. The chapters are intended to meet the aims of the four main themes of the dissertation as outlined in the table 1.1 below.

**Table 1.1 Outline of chapters for the dissertation**

| Theme | | Chapters |
|---|---|---|
| Introduction | 1 | Introduction |
| Literature Review | 2 | Epistemological Dimensions of Complexity Research |
| | 3 | Theoretical Foundations of Planning and Urban Change |
| | 4 | The Complexity of Urban Regeneration Initiatives in Britain |
| Methodology | 5 | Research Methodology and Strategy |
| Research Findings and Reflection | 6 | From Prize-winners to Architects of a Disaster: Lessons from Hulme |
| | 7 | Research Findings and Analysis |
| | 8 | Summary and Conclusions |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# CHAPTER 2: EPISTEMOLOGICAL DIMENSIONS OF COMPLEXITY

## 2.1 Introduction

Chapter one served as a general introduction to the study by providing the research agenda and exposing the utility of adopting complexity theory in understanding decision-making in urban regeneration processes. Chapter two discusses the environment of social research inquiry with particular emphasis on the epistemological foundations of complexity research. The ultimate aim is to establish a firm foundation for the adopted methodological approach and also to unmask the complexity language that is being used in the study. It is, therefore, a matter of necessity that the chapter begins with an exposition of complexity theory in terms of meaning, origins and scope. The second part of the chapter consists of sections 2.4 to 2.6 and discusses the epistemology behind complexity thinking. Against each of the epistemological dimensions, a selection of associated application tests is also discussed. The penultimate section (2.7) is a general discussion that suggests the epistemological inclination of the study.

## 2.2 The complexity revolution

According to the journalistic account of complexity by Waldrop (1992), the complexity revolution began the first time someone said,

> "Hey, I can start with this amazing simple system, and look - it gives rise to these complicated and unpredictable consequences".

It appears that the science of complexity emerged as a product of the desire to explore the real[1] world. Since the time of Isaac Newton, scientists had become used to dealing with linear approximations - thinking of the world as a fundamentally neat and predictable place obeying well understood laws. The reductionist approach was the royal road to Nobel Prize (Waldrop, 1992) -

[1] The word real is here used to refer to a stratum of reality that lies outside the artificial knowledge products often manufactured in the experimental environment, or where a researcher attempts to "hold other things constant" so as to be able to reach a conclusion.

dissecting the world into the smallest and simplest pieces possible. One looked for the solution to more or less idealised set of problems, somewhat divorced from the real world, and constrained enough to find a solution. Practically, this has found its expression in the experimental method whereby results of observations in the laboratory are taken as a true representation of universal laws. But the real world is never as smart as the experimental environment. Except for the very simplest physical systems, almost everything and everybody is entangled into a vast, non-linear web of incentives and constraints (ibid). Alongside the emergence of complexity thinking, researchers began to realise that some very simple systems could produce astonishingly rich patterns of behaviour and that all that was needed to understand or explain them was a little bit of mathematics of non-linearity. Consequently, researchers began to unveil questions that were considered 'sacred' for many years. Questions like, why is there order and structure in the world and where does it come from? began to find their way into many research agendas. The answers to these far-reaching questions seemed to be embedded within the science of complexity - the new way of looking at the world. After many years of dissecting everything into molecules, atoms, nuclei and quarks, scientists finally started to reverse that process (ibid). Instead of looking for the simplest particles possible, they started to look at how the pieces go together into complex wholes. There has been a general movement from what Ervin Laszlo (1996) calls the mechanistic view to a holistic perspective. The dichotomous relationship between the two is summarised in the table below.

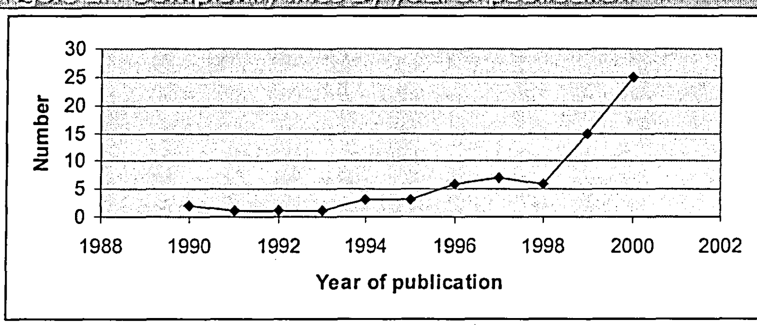
**Table 2.1 The classical and the systems view of the world**

| Mechanistic View (Classical) | Holistic View (Systems) |
|---|---|
| Nature as machine with replaceable parts | Nature as irreducible and interpenetrative organisms |
| Deterministic and linearly causal | Innate but non-deterministic purpose – flows and process oriented |
| Atomistic and individualistic | Nature and people are communal and interlinked |
| Materialistic: Things are distinct measurable material entities with fixed properties and highly predictable | Matter as configuration of energetic flow in probabilistic processes allowing for self-creativity and unpredictability. |
| Ever expanding growth in material wealth defines "success" and promotes greater use of natural resources | Sustainability of interlinked whole and development through flexibility and accommodation among co-operative parts |
| Anthropocentric: Man dominates nature. Control and mastering it for own ends | Humans an organic part of a self-maintaining and self-evolving whole. |
| In social sciences the dominant notions are struggle for survival, profit of individual and some "assumed automatic coincidence of individual and societal good." | Competition mitigated by co-operation; individualistic work ethos tempered with tolerance for diversity and experimentation fostering adaptation and harmony |
| In medical science: body as machine. Medicine impersonal and factual intervention. Body and mind are separate | Mind and body a whole and a system of interacting parts. Psychic and interpersonal as important as physical and physiological |

Source: Adapted from Runnion, 2002

The language and practice of complexity are still relatively new in science in general and in the domains of social sciences in particular. Its serious consideration as a subject matter is barely two decades old, and may be accurately traced to the ideological revolt by a determined group of multidisciplinary researchers who founded the Santa Fe Institute in May 1984. Two years later, in 1986, Stephen Wolfram established the Centre for Complex Systems at the University of Illinois. Since then, complexity theory seems to have taken an upward swing as suggested by figure 2.1.

Figure 2.1 Complexity titles by year of publication




Source: After Price, 2000

The graph shows a general upward movement in terms of research and publications based on the complexity theme particularly towards the conclusion of the last decade of the 20th century. The general thesis at the heart of complexity is the rejection of reductionism, although this part is not always appreciated even by those who propose it (Byrne, 1998). Perhaps this is partly due to the multidimensional and multidisciplinary nature of the theory as evident in the dilemma surrounding its definition.

### 2.2.1 Defining complexity theory

There is no precise definition of complexity so far. This void may be partly attributed to the fact that complexity is still an emerging science, and partly to the multidisciplinary nature of the subject. Instead of a single identifiable complexity theory, there are a number of theories concerned with complex systems that are pooled together under the general project of complexity research. The exact nature of complexity research is difficult to discover because of the high degree to which complexity discourses are traded across disciplinary boundaries (Manson, 1999). For this reason, there is also a propensity for disciplines to borrow methodological techniques from other disciplines or to speculate on subjects typically perceived as lying outside the province of their domains. However, as a label of scientific (including social) interest area, complexity generally refers to the study of systems with many interacting components. It is a kind of grand unified holism that finds its expression in subjects ranging from evolutionary biology to those of economics, politics and history (Waldrop, 1992). These are self-organised systems that have many components and many characteristic aspects, exhibit many structures in various scales, undergo many processes and adapt to external environments (Auyang, 1998). In the natural world, complex adaptive systems include brains, immune systems, ecologies, ant colonies etc. In the human world, they include cultural and social systems such as the economy, community organisations, corporate organisations, etc.

As figure 2.1 above suggests, there has been a growing amount of literature on complexity since its genesis in the early to mid 1980s. The various dimensions and issues surrounding this emerging science are expressed in this burgeoning account of the new world view, notably by writers such as Waldrop, 1992; Lewin, 1992; Kauffman, 1994; Gell-mann, 1994; Holland, 1995; Cilliers, 1998, and many others too numerous to list. The definition of complexity is therefore spread across the diversity of the subject matter itself. For example, Cilliers, 1998 begins by defining complexity in terms of its location with respect to mere "complicatedness". According to this view, if a system can be given a complete description in terms of its individual components despite having a large number of such constituent elements, then the system is merely complicated and not a subject of complexity. Price (2000) equally acknowledged this notion, although he went a little further by proposing a three-layered distinction in defining complexity. The first level (without any implication on the order) pertains to the complexity associated with non-equilibric systems. To consolidate this notion, Price made reference to Dawkins' (1986) definition of life as a property of improbable complexity possessed by an entity that works to keep itself out of equilibrium with its environment. He also replicated Dawkins' most graphic example:

> "...a dead parrot thrown into the air obeys the laws of physics, describes a perfect parabola, and then falls back to earth. A live one disappears over the country boundary; its components working together to maintain their collective entity against the force of gravity." (Dawkins, 1986).

This slice of the view of complexity is a characteristic feature of all complex systems and may be summarised in the fundamental notion that "equilibrium is death" (Pascale, et al, 2000). The second tier of Price's (2000) location of complexity is that of complicatedness also alluded to by Cilliers (1998) as discussed above. In organisational settings, this complicatedness may generally be understood and termed as organisational non-simplicity associated with the shear cost and burden of organisational bureaucracy. At the third level is a more general or diluted sense of complexity many of whose advocates are those who have been inspired by the mainstream (first tier) complexity. It is not the intention of this discussion to put a premium on the semantics surrounding the language of complexity. Rather than grappling with a definition that may not be ripe at the present moment, there is perhaps more utility in merely examining the characteristic features of complex systems.

### 2.2.2 Characteristics of complex systems

Complex adaptive systems are everywhere and are found in many different forms. However, they all seem to share certain common properties that distinguish them from mere complicated objects. Cilliers, (1998) proposed a ten-point criterion for identifying such systems. However, a close analysis of his ten points reveals that many of them are simply variations of the same themes and that these are actually summarisable into the four main characteristics of multiple interacting agents, self-organisation, adaptation, and non-linearity, all of which are consistent with Waldrop's (1992) definition of complex adaptive systems.

The aspect of a large number of constituent elements is perhaps the starting point for any attempt at locating complexity. Complex systems are characterised by a great many agents interacting with each other in a great many ways. If there is any coherence in the system, it owes its origin to the competition and co-operation (interaction) among the agents themselves. Interaction among the constituent agents is therefore vital to the sustenance of the system as a whole. This leads to the second characteristic - spontaneous self-organisation - which derives from the interactions among agents. People trying to satisfy their material needs unconsciously organise themselves into an economy through a variety of individual acts of buying and selling. Flying birds adapt to the actions of their neighbours thereby unconsciously organising themselves into a flock (Waldrop, 1992). The process of seeking mutual accommodation and self-consistency allows the agents to transcend themselves, acquiring properties that they might never have possessed in their individual capacities. Moreover, complex systems have many levels of organisation, with agents at anyone level serving as the building blocks for agents at a higher level. In economic spheres for example, the organisational hierarchy would range from individual consumers through to firms, economic sectors, national economies and finally the global economy.

The third feature of complex systems relates to their ability to respond to the activities within their surroundings. The systems are constantly rearranging their building blocks as they gain experience. Thus the human brain constantly reorganises its neural networks so as to learn from experience. Species evolve for better survival in a changing environment and the market place responds to changing consumer demands. Furthermore, complex systems are constantly making predictions based on their various internal models of the world. This element of modelling and prediction transcends human foresight and consciousness. John Holland's classifier systems model (see below) attempts to explain how complex systems achieve this task of unparalleled magnitude.

A slightly divergent view of adaptive capacity is provided by Murray Gell-mann and his maladaptive schemata (Gell-mann, 1994). In this theory, Gell-mann argues for the presence of maladaptive behaviour in certain systems. Specific traditions, customs, laws and myths of a given society can be looked at as "cultural DNA". They represent the shared experience of many generations and comprise the schemata for the society, which functions as a complex adaptive system. Gell-mann proposes four mechanisms that might permit maladaptive scheme to survive. The first involves external selection pressures which he attributes to the contrast between superstitious and science theories. In science the selection pressures affecting the promotion and demotion of theories relate to the success or failure of those theories. In superstition, non-scientific kinds of selection pressures play dominant roles. The second source of pressure comes by way of influential individuals. Gell-mann argues that in the study of the evolution of human organisations, it is not always advantageous to consider the individual members of the organisation merely as simplified generic agents. Decisions made by specific individuals make a great deal of difference to future history. Thirdly, maladaptive schemata sometimes persist because the relevant kind of adaptation has come to a halt or nearly so. The fourth mechanism relates to time lapse, which suggests that maladaptive schemata were once adaptive but under conditions that no longer prevail. In other words, the environment of the complex adaptive system may change at a faster rate than the evolutionary mechanisms can accommodate. Gell-mann's thesis obviously puts a caveat on certain areas of mainstream complexity thinking, particularly the challenge increasingly cast on the power of central control in decision-making. At best his argument can help us understand why and how certain influential individuals in society have managed to steer whole social systems towards their own ideological beliefs, only to be defeated by the emergent forces of complexity years later. The demise of communism in the Eastern bloc is a classic example of this phenomenon. At worst, Gell-mann's thesis has the potential of breeding complacency with the (often temporary) equilibrium conditions created by the powers of central control.

The final characteristic feature of complex systems is the non-linearity of such systems. Each of the complex, self-organising, adaptive systems possesses a kind of dynamism that qualitatively distinguishes it from non-complex systems. Complex systems are more spontaneous, more disorderly and more alive than static objects which might merely be complicated. This dynamical nature of complex systems is better explained by chaos theory - that amazing science of the unpredictable (Gleik, 1993). The basic notion of this theory is that very simple dynamical rules can give rise to extraordinarily intricate behaviour. Chaos is not synonymous with disorder but suggests that it is extremely difficult if not impossible to model certain systems even though the systems themselves are ordered (Allmendinger, 1999). But chaos theory on its own has very little to say about the fundamental principles of living things (social systems inclusive) or of evolution. It does not explain how systems, from a state of randomness, organise themselves into complex wholes. It doesn't provide a solution to the paradox of the growth of order and structure in the universe despite the world's tendency towards decay.

A summary of the properties of complex systems is also given by Kay, et al (1999) in an eight-point framework as shown in table 2.2 below.

**Table 2.2 Characteristics of complex systems**

| | Property | Description |
|---|---|---|
| I | Non-linearity | Behave as whole systems. Cannot be understood by decomposing them into pieces which are added or multiplied together |
| II | Hierarchical | Are hierarchically nested. Such nestings cannot be understood by focussing on one hierarchical level alone |
| III | Internal causality | Non-Newtonian, not mechanisms, but rather are self-organising. |
| IV | Window of vitality (Edge of chaos) | Must have enough complexity but not too much. There is a range within which self-organisation can occur |
| V | Dynamically stable | There may not exist equilibrium points for the system |
| VI | Multiple stead states | There is not necessarily a unique preferred system state in a given situation. Multiple attractors may be possible and the current system state may be as much a function of historical accidents as anything else. |
| VII | Catastrophic behaviour | Moments of unpredictable behaviour. Sudden discontinuity |
| VIII | Chaotic behaviour | Our ability to forecast and predict is always limited. |

Source: Adapted from Kay, et al. (1999)

So, despite having a common area of intersection, chaos and complexity are two different spheres of the knowledge enterprise. One concept that puts the two into perspective is Christopher Langton's "something mysterious" that makes life and mind possible (Waldrop, 1992). That something (he says) is a special kind of balance between the forces of order and those of chaos. Its name is "the edge of chaos".

### 2.2.3 Life at the edge of chaos

If systems are understood in terms of how they behave and not how they are made, it is possible to distinguish the two extremes of order and chaos. The scenario can best be explained in terms of the difference between solids and liquids. In solids, atoms are locked into place, while in liquids they tumble over one another at random. However, right in between the two extremes, at a kind of abstract phase transition called the "edge of chaos" you also find complexity - representing a class of behaviours in which the components of the system never quite lock into place and never quite dissolve into turbulence either. Langton (in Waldrop, 1992) further argues that these are the systems that are both stable enough to store information and yet evanescent enough to transmit it. These are systems capable of being organised to perform complex computations, to react to the world, to be spontaneous, adaptive and alive. But how do complex systems get to the edge of chaos? The answer can easily be deduced from the above illustration about solids and liquids. In competitive terms it becomes logical to conclude that frozen systems can always do better by loosening up a bit, and turbulent ones can do better by getting themselves together a little more organised. If a system is not on the edge of chaos, learning and evolution would push it in that direction. If the system is already on the edge of chaos, learning and evolution would pull it back if ever it tries to drift away, as long as adaptive conditions are prevalent. Learning and evolution would make the edge of chaos stable, a natural place for complex systems to be, in the absence of maladaptive behaviour (Murray Gel-Mann, 1994). But it seems that learning and evolution do not just pull agents to the edge of chaos, they also move agents along the edge of chaos in the direction of greater complexity. This aspect of emergence has the potential of explaining how complex systems ascend higher and higher on the ladder of advancement with time. Modelling such systems is not the easiest undertaking to pursue although the dawn of complexity has seen a few such models mushrooming alongside the emergence of the theory itself.

## 2.3 Early models of complexity

It has already been mentioned that one of the reasons for the late arrival of the science of complexity on the research scene was the limited nature of the tools of analysis. As Brian Arthur suggested, when it comes to real world complexities, the elegant equations and the fancy mathematics learnt in schools are no more than limited tools (Waldrop, 1992). Most of the conventional techniques like calculus or linear analysis are only suitable for describing unchanging particles moving in a fixed environment. To really get a deep understanding of complex systems, what is needed are mathematics and computer simulation techniques that emphasise internal models, the emergence of new building blocks and the rich web of interactions among multiple agents. Using computer simulation, it is possible to experiment with simple models that can be run on a desk top so as to try out how well they really work (ibid). One can try to pin down vague notions with more and more precision and extract the essence of how interactions, learning, emergence, etc really work in nature. There is a wide range of such models that have been experimented on by researchers in the recent past including, John Holland's classifier systems, Stuart Kauffman's genetic networks, autocatalytic set model for the origin of life, cellular automata, to mention but a few. Three of these models are briefly considered here.

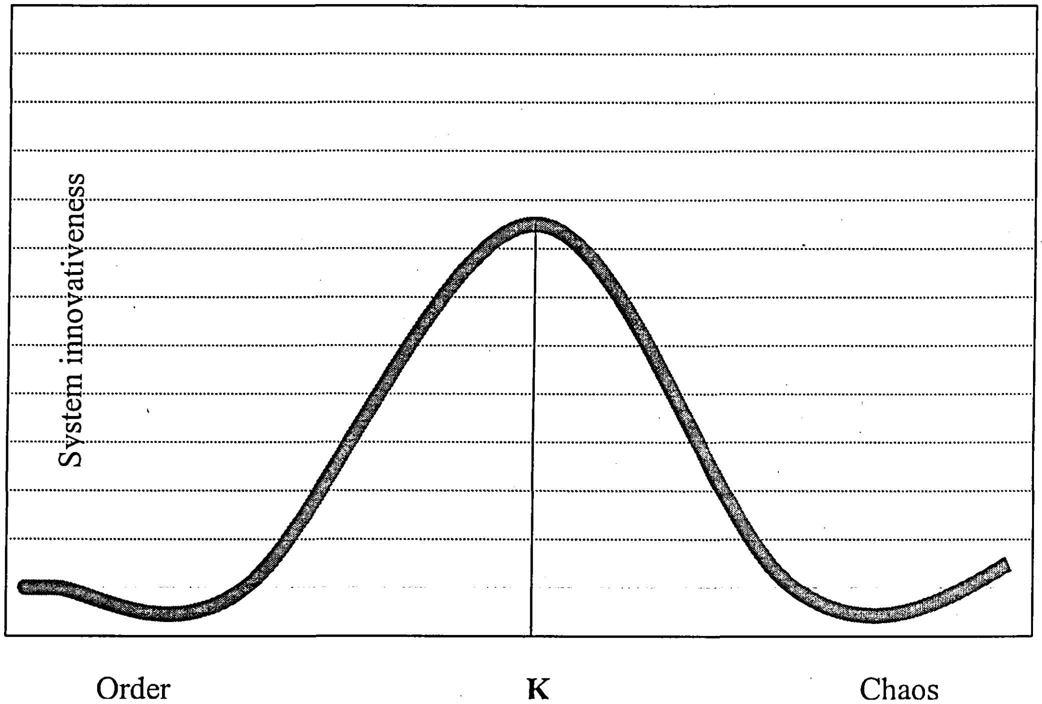
### 2.3.1 John Holland's Classifier Systems model

The classifier systems approach was developed by John Holland to explain how complex systems build internal models and predictions using the principle of feedback from the environment (Waldrop, 1992). He started from the premise that the system simply has to try out the models, see how well their predictions work in the real world, and (if it survives the experience) adjust the models for the better next time. In cognition, the agents are individual minds, the feedback comes from teachers and direct experience and the improvement is called learning. In order to test these hypotheses, Holland built a computer simulated adaptive agent which he designed as a hybrid, incorporating the neural network and the rule-based systems approaches. He called the set of rules "classifiers." His conclusion was that whenever the agent does something right and gets a positive feedback from the environment, it would strengthen the classifiers responsible. Whenever it did something wrong, it would weaken the classifiers responsible. Either way, it should ignore the classifiers that are irrelevant.

### 2.3.2 Stuart Kauffman's NK Landscape model

Stuart Kauffman developed the NK landscape model in order to get a better understanding of natural selection and what it really means for the fitness of a species to depend upon many genes. The acronym NK refers to the fact that each species has N genes, with the fitness of each depending on K other genes (Kauffman, 1994). His starting point was to imagine an ecosystem where species are free to mutate and evolve by natural selection, but where they can only interact with each other in specified ways. A frog tries to catch a fly using its sticky tongue, which tactic is likely to vary depending on how the fly responds. In an economy, a firm is free to organise its internal operations although its relationships to other firms are fixed by its contractual obligations. However, there is room for co-evolution within these constraints. If a frog develops a much longer tongue, the fly has to learn how to make a faster move. If the fly develops a chemical that makes it test bitter, the frog has to learn how to stomach that or even find alternative food targets. If a raw materials-producing firm scales down on its production, other firms that depend on those raw materials have to find alternative supply and / or other means of production. Kauffman further suggested that the best way to model this scenario is to look at each species in turn. At any given time, the set of strategies available to a species forms a kind of imaginary landscape of "fitness" where the most useful strategies are at the peak and the least useful somewhere down in the valley. Each time the species mutates, it takes a step to a new strategy of greater fitness. However, these landscapes are not independent, they are interconnected. Therefore, what is considered a good strategy for one species depends on what other species are doing and vice-versa. Consequently, a step of one agent on its fitness landscape affects the fitness landscapes of all the other agents. When Kauffman did his NK ecosystem, he verified the three phases of an ordered regime, a chaotic regime and an edge-of-chaos like phase transition - where chaos and order are in balance. Figure 2.2 depicts the principle behind the NK landscape model.

**Figure 2.2: Stuart Kauffman's NK Landscape Model**




From Kauffman's numerical simulations, it turned out that the maximum fitness occurred right at the phase transition, conceptualised as the edge of chaos.

### 2.3.3 John Von Neuman's cellular automata

Cellular automata were invented in the 1940s by mathematicians John Von Neuman and Stanislaw Ulam, while they were working at the Los Alamos National Laboratory in Northern Central New Mexico (Waldrop, 1992). They are the simplest models of spatially distributed processes and consist of an array of cells, each of which is allowed to be in one of a few states. At the same time, each cell looks to its neighbours to see what states they are in, and using this information each cell applies a simple rule to determine what state it should change to. This basic step is done repeatedly over the whole array. The most famous cellular automaton is the "game of life" invented by an English mathematician John Conway in the 1960s. The game of life was more like a miniature universe that evolved as one watched (ibid). The game would start with a computer screen showing a snapshot of this universe: a two-dimensional grid full of black squares that were "alive" and white squares that were "dead." Once the game was on, the squares would live or die according to a few simple rules. Each square in each generation would first look around at its immediate neighbours. If too many of those neighbours were already alive, in the next generation the square would die of overcrowding. If too few neighbours were alive, then the square would die of loneliness. However, if the number of neighbours was just right (edge of chaos?) then the square would be alive. One could start up this game with a random scattering of live squares, and watch them instantly organise themselves into all manner of coherent structures.

The first of the above models of complexity pronounces the essence of feedback processes in complex systems, while the other two demonstrate the edge of chaos principle. One other common feature of all these models of complexity is the notion of connectionism which received recognition at the Santa Fe Institute particularly by Doyne Farmer (ibid). It is the idea of representing a group of interacting agents as a network of "nodes" linked by connections. The concept shows how the capacity for learning and evolution can emerge even if the nodes, the individual agents, are brainless and dead. By putting the power in the connections and not the nodes, the idea points the way toward a very precise theory that the essence of life is in the organisation and not the molecules. This is given appropriate detail in section 2.5 below but it is sufficient to say here that connectionism seems to be at the very heart of postmodernism as an epistemological enterprise for much of the natural and social sciences.

## 2.4 Complexity and postmodernism

To understand postmodernism and its position with respect to complexity theory, it is necessary to start by discussing its precursor, modernism. The term modern is used to denote any scientific approach that legitimates itself by appealing to a coherent metadiscourse that performs a general unifying function. The approach makes explicit appeal to some grand narrative, such as the emancipation of the working class, the creation of wealth, the hermeneutics of meaning, or the dialectics of the spirit (Cilliers, 1998). This traditional way of confronting (actually avoiding) complexity was (and still is) to find a secure point of reference that can serve as an anchorage upon which everything else is derived. It follows from this therefore that the postmodern approach represents some kind of scepticism towards metanarratives.

Unlike the modern approach which aims at finding a simple dissertation that can unify all form of knowledge, postmodernism encourages accommodation of multiple discourses whose characteristic is that they are locally determined and not externally legitimised. It is this eclectic approach by postmodernism that makes it appealing to complexity theory. Although there are some inconsistencies between the two, these are mainly confined to the domains of natural sciences (Allmendinger, 1999). Their literal and metaphoric uses in the social sciences are similar in many ways. For example, both complexity and postmodernism question the overriding deterministic, linear and reductionist assumptions embraced in much of social science. They both pronounce the dynamism, unpredictability and subjectivity of social science canons. Further, and perhaps most importantly, they both provide an alternative set of criteria upon which to build pseudo-scientific disciplines, including those founded on the quest for a better understanding of the gyrations that drive the urban system. The general suggestion from this set of parallels is that the postmodern approach is inherently sensitive to complexity, that it acknowledges the importance of self-organisation while at the same time denying a conventional theory of representation.

One important argument that is often used against postmodernism is the view that if all discourses were to have only local legitimisation, then the resultant fragmentation of the social fabric would put all knowledge into a relative perspective. In the absence of external checks, no local discourses can be seriously criticised and each treatise would become independent of all others (Cilliers, 1998). This would lead to isolation of discursive communities and ultimately imply that each entity has only itself as a reference point with no means of an objective pursuit of knowledge. Parushnikove, 1992 (quoted in Cilliers, 1998) argues that this would create a situation where “anything goes”, a position considered as unacceptable in the philosophy of science. This argument of “anything goes” has been branded as a fallacy by many proponents of the postmodern condition (Cilliers, 1998; Feyerabend, 1975; Lyotard, 1984). Using the idea of language games, Lyotard (1984) mounted a formidable critique of the argument as may be discerned from his own words:

> "A self does not amount to much, but no self is an island; each exists in a fabric of relations that is now more complex and mobile than ever before. Young or old, man or woman, rich or poor, a person is always located at nodal points of specific communication circuits, however tiny these may be...No one, not even the least privileged among us, is ever entirely powerless over the messages that traverse and position him at the post of sender, addressee, or referent. One's mobility in relation to these language game effects is tolerable, at least within certain limits...it is even solicited by regulatory mechanisms, and in particular by the self-adjustments the system undertakes in order to improve its performance" (Lyotard, 1984:15)

Lyotard's passage clearly pronounces the connectionist model of, not only language games, but the operation of social systems as well. In fact, a critical analysis of the passage should reveal the presence of all the characteristic features of a complex system outlined above. The perception of language as a complex adaptive system is given appropriate illustration in Saussure's model of language in section 2.5.1 below. The preoccupation here is to counter the "anything goes" hypothesis. Lyotard's attack of the argument is in the form of a dual-faceted critique. The first level argues that although society is composed of different discourses (nodes), these cannot isolate themselves from the whole network because there are always connections to other discourses. The different local narratives interact in different scales, but no one particular discourse is fixed or stabilised in isolation from the others. In short Lyotard here upholds Saussure's signifier-signified concept of meaning (see section 2.5.1 below) where local narratives only make sense in terms of their contrasts and differences to surrounding narratives. What this whole description suggests is a self-organising system in which meaning is generated through dynamic processes and not through the passive reflection of independent agents that can make anything go (Cilliers, 1998). The second aspect of Lyotard's critique is equally drawn from the network perspective of society and is grounded in the distributed nature of social networks. Here, the core argument, which is perfectly consistent with complexity theory, is that information is not represented by specific agents but encoded in connections distributed across many agents. Although this notion puts the final nail to the argument claiming that the postmodern approach results in isolation of entities, there is a third point that is deducible from Lyotard's passage on language games, which is crucially important to the understanding of complex systems. It is the acknowledgement of self-organisation, a characteristic feature of complex systems that emanates from the interactions among nodal entities. The resultant social setting is not designed by means of some transcendental force, but emerges as a result of the manner in which the system responds to the contingent information in a dynamic fashion.

> "The process is a complex one involving many individuals with complex non-linear relationships between them, including feedback relations. Individuals co-operate to form clusters, but also compete for resources in the network. The history of the system is vitally important in the way in which meaning is generated in any part of it. The evolution of structures in the social fabric, causing continuous alterations, is an integral part of its dynamics" (Cilliers, 1998:17)

The emphasis of the postmodern condition has thus been identified as hinging heavily on the notion of connectionism rather than isolation of entities. This is postmodernism's important intersection point with the project of complexity. Since the latter is at the heart of this research, connectionism is, therefore, given discrete account here especially with regard to how it relates to complexity research.

## 2.5 Complexity and connectionism

The concept of connectionism is one of the fundamental principles of complexity theory as pointed out above. The recognition of this principle derives from the various sources of weaknesses inherent in the analytical method of understanding complex systems. Under the analytical (or reductionist) strategy, if something is too complex to be understood as a whole, it is dismantled into smaller units, which can then be put together again to make conclusions about the whole. The difficulty with this approach is that systems are not made up of merely the sum of their parts, but also by the intricate relations between the constituent agents. In dividing the system into atomistic units, the reductionist approach destroys the very fabric of what it seeks to understand. The study of complex systems should conversely place more importance on understanding the connections than the individual agents themselves. This notion finds its expression in many of the connectionist networks models, which happen to share the characteristics of complex systems. It is, therefore, possible to use these distributed modelling techniques as general models for complex systems, which can be implemented either physically or conducted through computer simulations (Cilliers, 1998). The merits of the former and its subsequent adoption in this research are discussed in chapter five.

The conceptualisation of connectionism from a philosophical perspective is best traceable to the work of Saussure (1974) and his structural model of language as interpreted in complexity terms by Cilliers (1998).

### 2.5.1 Language as a complex adaptive system

In his model, Saussure was concerned about the meaning of language in general and how words acquire meaning in particular. In order to do this, he argued that language consists of a number of individually distinct units called signs. Instead of dwelling on the minute characteristics of the signs themselves, he concentrated on the relationships among the discrete units. Each sign consists of two components: the signifier, which is the linguistic unit, and the signified, which is the concept the signifier represents. According to Saussure, a sign also has two other characteristics. The first is the absence of a natural connection between the signifier and the signified. Their relationship is purely arbitrary in that it is not given outside language and exists as a mere convention in language. The second characteristic is that the sign unfolds linearly in time, an argument that is upheld in this study, save for the linearity attachment to the notion. The concept spells out the evolutionary nature of complex systems, which in essence happens in a dynamic and non-linear fashion.

Language is a system constituted not by individual speech acts, but by a system of relationships that have no bearing at the individual user's level. Due to the arbitrariness of the signifier-signified relationship, a sign does not possess a natural identity but rather derives its significance from its relational position within the system. The sign is determined by the manner in which it differs from all the other signs in the system (ibid). Thus, the signifier pink will only have meaning to the extent that it can be differentiated from the signifiers brown, green, black, chair, etc. Therefore, language can be conceptualised as a complex (adaptive) system with the sign being a node (the agent or the actor) within a network of relationships. The sign is the natural product of the interactions among the linguistic units and cannot be ascribed to the choices of any individual user. That's exactly what Cilliers means by suggesting that because the users of language have to operate within the system of language they inherited, and because their understanding of language is constituted by that system, they can not break out of it. The system perpetuates itself in such a way that guarantees its integrity. All complex adaptive systems are evolutionary. Concerning the evolutionary nature of language, Saussure had the following to say:

> "Nothing could be more complex. As it is a product of both the social force and time, no one can change anything in it...and the arbitrariness of its signs theoretically entails the freedom of establishing just any relationship between phonetic substance and ideas. The result is that each of the two elements united in the sign maintains its own life to a degree unknown elsewhere, and that language changes or rather evolves, under influence of all the forces which can affect either sounds or meanings. The evolution is inevitable; there is no example of a sign language that resists it. After a certain period of time, some obvious shifts can always be recorded". (Saussure, 1974:76).

At the heart of Saussure's thesis is the argument that language can only be controlled (as if this were possible) when it is not in circulation. Another way to put is that when there are no interactions among the various language units, language would not evolve. The elements of the system interact with the rest of the system, and in the process the whole system is eventually changed, giving rise to a transformation of the old system. Saussure further argues that there is no external (central) control that provides a direction for change. Change is rather a product of contingencies arising within the context that language is used. This aspect is strongly upheld by complexity theorists and is manifested in the emphasis on the power of connections rather than any individual agent in the system. For example, in business organisations, it is now argued that the success of an organisation is squarely embedded in the relations among the agents and not in any one particular Chief Executive Officer. This is discussed in more detail in section 2.5.2 below. These qualities are also present in - perhaps the best-known example of a complex adaptive system - the brain and in particular the secret behind memory. Memory does not reside in any one particular neuron, but in the relationships among neurons (Frued, 1950). This scenario fits well with the post-structural project of logic, according to which, no word in language, or neuron in the brain, has any significance by itself. Meaning is rather determined by the dynamic relationships among the components of the system (Cilliers, 1998). This notion has recently, and appropriately, been interpreted in business organisations, notably by Bill McKelvy and his concept of Distributed Intelligence (McKelvy, 2001) as well as other organisational complexity theorists such as Axelrod and Cohen (1999), and Price and Shaw (1998).

### 2.5.2 Connectionism in organisational settings

McKelvy's work centres on human and social capital as powerful tools for increasing corporate IQ, which he defined as Distributed Intelligence (DI). The concept is a direct derivative of an earlier piece of work by Zohar (1997) entitled "Rewiring the Corporate Brain". Unpacking Zohar's title reveals an interesting interpretation of connectionism at work. 'Rewiring' is a term that she uses to emphasise the alteration of connections among individual human agents, taking the place of neurons in a corporate brain (McKelvy, 2001). In his paper, McKelvy's main thesis was to establish the actions that company Chief Executive Officers need to undertake in order to foster the emergence of DI in their firms. Rather than delving into the minute details of this question, the present discussion ends at establishing a case for the appreciation of connectionism in human organisations. His starting point is the definition of order and especially what causes emergent order and self-organisation. It is apparently obvious that one would not exhaust this question without mentioning (in fact starting with) Darwinism in the biological world, where order is defined in terms of diversity of entities. In the social realm, Durkheim (1893) and Spencer (1898) similarly defined order as the emergence of social entities. Building on these earlier conceptions, Sommerhoff (1950), Ashby (1956, 1962) and Rothstein (1958) defined order not only in terms of entities but also in terms of connections among those entities. Ashby (1956) in particular argues that order exists in the midst of entities if only the enabling environment is availed. This led him to conclude that environmental constraints are the causes of order and that this order does not emerge if the environmental conditions are chaotic. The immediate questions that arise include, what are these enabling conditions, and at what level are they said to be chaotic? Taking this issue a little further would take us back to the edge of chaos hypothesis as we search for the appropriate balance in the enabling environment. However, for the purpose of this discussion, it is sufficient to emphasise that connectivity is acknowledged as a fundamental driving force in complex systems. Reverting to McKelvy's concept of corporate brain, we see that DI consists of the same basic elements of nodes and links for order; human (H) and social capital (S) for distributed intelligence. The principle is, therefore, summed up in the following equation:

$$DI = S + H$$

McKelvy equally emphasised the importance of environmental constraints. It is important, therefore, to note that S and H (defined as networked human capital) cannot amount to DI unless the emergent social capital (S) is in the context of non-chaotic environmental constraints. The argument may also be extended by pointing out that neither would the social capital emerge if the environment was too rigid or centrally controlled.

A modification of McKelvy's corporate IQ equation is, therefore, necessary in order to take into account the aspect of appropriate environmental conditions:

$$DI = S_t + H$$

Where t is the time at which environmental conditions are at the edge of chaos.

This view, based on emergent networks in the context of environmental constraints is in perfect tune with the complexity project, especially the line of thinking embedded in Stuart Kauffman's network model discussed above. At a methodological and conceptual level this is manifested in the concept of social networks, especially the principle contained in Granovetter's (1973) strength of weak ties identified in chapter five.

The postmodern condition and its associated connectionist models are undoubtedly appealing to the new world view. If there is a more robust, more specific and more novel enterprise that is harmonious with the complexity project, this can only be found in Roy Bhaskar's (1975, 1998) realism.

## 2.6 The realist account of complexity research

The central theme of Roy Bhaskar's realism (1975) lies in the argument that the world (including the social - it will be argued) has an existence that is independent of our perception of it. To those who are already initiated in complexity thinking, this argument is more of a reassurance note than a fresh injection into their ideological vocabulary. Spontaneous self-organisation in complex systems is in perfect synchronisation with this notion of the independent existence of the (complex) world. If one accepts this hypothesis, and in view of the multidimensional nature of complexity theory, then the major challenge is reduced to that of interpreting realism into one's specific complexity projects. In the pursuit of such an undertaking and having already discussed postmodernism, the discussion begins by sweeping through and contrasting the three traditions of philosophy namely, positivism, transcendental idealism of Emmanuel Kant, and finally Roy Bhaskar's transcendental realism. The starting point is a dismissive note on positivism.

### 2.6.1 The demise of positivism

The idea of science is usually identified with authoritative knowledge. Perhaps positivism is the most important attempt to create authoritative knowledge about the world (Smith, 1998). Paradoxically, the label of positivism is something that many people, especially from the social sciences would like to forget. Even then, it is (still) difficult to think of any philosophical approach that does not develop its ideas in opposition to positivism. Some have expressly curtailed its debate arguing that it is a tired subject (Byrne, 1998). What these extremists fail to appreciate is that positivism has its own foundational place in the philosophy of science which deserves pronouncement if new epistemologies are to be given their specific ideological locations. Because of its psuedo-authoritativeness, positivism has over the years been applied and extended to a number of social science disciplines. All the approaches claim to offer a scientific objective picture of the social world (Smith, 1998). Consequently, the term positivism has become equivocal and quite often contains different assumptions for different people. It is therefore, possible to define positivism in diverse ways. But generally speaking, positivism has come to be associated with epistemologies which make experience the foundation of all knowledge, and also with their complementary ontologies which propose a division between objects which can be observed and those which can not. As a label of a philosophical undertaking, positivism is identified with a chain of isms that include, naturalism, phenomenalism, nominalism, and atomism. Its central theme and the main point at which it becomes tangential to the realist theory of science is grounded in classical empiricism (of David Hulme) and the experimental method which (still) maintain that only the evidence of the senses gives us access to the law-like structures of the world. Empiricism also holds that the causal mechanisms that order the world are located in the province of experience itself (Reed and Harvey, 1992). In his landmark assault on this epistemic fallacy, Bhaskar (1975) coined a three-layered critique of positivism, starting with an attack on laboratory-based laws of "nature".

## Laboratory vs. the real world

According to David Hulme, the discovery of scientific laws involves putting questions to nature (Reed and Harvey, 1992). This is achieved through the experimental method whereby the scientist manipulates the conditions of the experiment in the laboratory in order to produce recurrent ordered events. The neat conjunctions of events in the laboratory are then taken as a reflection of the actual medium through which universal causal laws operate. Bhaskar debases this foundation principle of positivism by cautioning that if the truth claims of empiricists are to remain lucid, they must begin to accept that the experimental method cannot be the basis for discovering natural laws. If the experimental findings are to retain their credibility, the causal source of the order observed in the laboratory must begin to refer to a stratum of reality that lies outside the domains of what is immediately given (Bhaskar, 1975). Bhaskar, therefore, dismisses the experimental method as neither a self-contained nor a self-sufficient approach to the discovery of causal laws. The constraints imposed by the scientist to draw out nature's law-like properties only create limited idealised knowledge. These canons of reductionism only endure within the confines of the closed experimental environment. They quite often quickly vanish when taken from the enclosure and tested in the open (real) world. Such are among the shortcomings of the reductionist paradigm that have given rise to the birth of the new science of complexity. One would perhaps argue that sociological positivists (especially in economics) have for a long time recognised this weakness by seeking refuge in the evasive usage of ceteris peribus instruments or "holding other things constant".

## Holding other things constant

The desire to generalise the resultant observations from the experimental environment to the real world puts positivists in another dilemma (Bhaskar, 1978). Either they elect to defend their strict empiricism of cause and effect, thus admitting that the laws discovered in the experimental settings only hold within the boundaries of that closed environment, or resort to "holding other things constant". In the latter, the evasive counterfactual use of *ceteris peribus* instruments is employed to argue that if only the real world could be controlled in the same manner as it is in the laboratory, then the resultant laws of the experiment would also manifest themselves in nature. Thus, there seems to be no other way out of this dilemma for positivists apart from admitting to the artificiality of the experimental method, and thereby reducing the experimental findings to mere clues to the discovery of reality. Reed and Harvey's (1992) amplification of this argument make the point clear.

> "For Positivism to sustain a plausible self-accounting, it must abandon empirical realism and ground its explanations in a world of entities - entities that are endowed with real causal powers, latent capacities, and slumbering liabilities. It is the complex interaction of these powers and liabilities that produce law-like, experimental conjunctions. These same entities generate our every day world, but not in the clean, recurrent stream of cause and effect that is regularly manufactured in the laboratory..." (Reed and Harvey, 1992: 356).

Another point of quandary that is still haunting the *ceteris peribus* school is in the desire to embrace predictive models. Since the time of Sir Isaac Newton, scientists (including those in the social world) have become used to operating in the closed environment, dissecting entities into the smallest units possible and constrained enough to be able to make predictions in that environment. But the real world is not a closed system - it is open and complex - and it is this openness and complexity that renders prediction a futile undertaking. Moreover, the real world is largely identified with historical structures. It is by virtue of the emergent properties that the laws by which complex processes take on an unpredictable and tendential character (Reed and Harvey, 1992). Statements that describe this tendential nature of scientific laws are called normic statements (Bhaskar, 1975). These statements do not rely on the verification principle of meaning that is worshipped by proponents of the experimental method. The fact that normic statements only point to tendencies does not put them out of touch with reality. As Reed and Harvey (1992) argue, most realistic scientific explanations are more of historic accounts than predictions. To this extent, the two authors suggest that prediction must take a different path - it must either assume the limited form of modelling particular events or restrict its explanations to the long-range, tendential descriptions of stochastic processes. It is the latter option that is accommodated in this study, and of course, in the entire complexity project. To crown off the assault on the ceteris peribus cohort and its appetite for prediction, it is therefore necessary to browse through complexity theory especially the views of the Santa Fe revolutionaries as summarised by Waldrop (1992). Under the journalistic title "You guys really believe that?" these pioneers of the complexity revolution derided the elusive usage of the "holding other things" practice most prevalent in economics and other social sciences:

> "...The physicists were shocked at the assumptions the economists were making - that the test was not a match against reality, but whether the assumptions were the common currency of the field. I can just see Phil Anderson (Physicist), laid back with a smile on his face, saying 'you guys really believe this?' The economists would reply, 'yeah, but this allows us to solve these problems. If you don't make these assumptions, then you can't do anything'. And the physicists would come right back, '...but where does that get you - you are solving the wrong problem if that's not reality'." (Waldrop, 1992:142)

The assumptions referred to in the passage are those that are normally contained in the *ceteris peribus* instruments designed to handle (actually avoid) complexity in social systems. Like the physics complexity theorists pointed out, "solutions" arising from such analyses are way off the grounds of reality and are, therefore, not sustainable. The third aspect of Bhaskar's critique of positivism is irreducible complexity and is contained in his transitive and intransitive distinction of knowledge and its production.

**Irreducible complexity**

To understand this point of argument it is necessary to unpack the key terms of transitive and intransitive knowledge. Transitive knowledge is a (social) product of human activity just like any other artificial products. It deals with artificial objects fashioned into items of knowledge by the science of the day and, therefore, transitive knowledge is susceptible to change. Intransitive knowledge on the other hand is of things which are not produced by human beings, for example, specific gravity, electrolysis, mechanisms of light, etc. Armed with this distinction, Bhaskar (1975) sees science as a transitive, historically conditioned activity which has, as its object, an intransitive ontologically layered world. He sees the world as a systematically and hierarchically layered whole. This hierarchical layering is a characteristic feature of all levels of existence from micro units of elementally particles to macro organisations of social systems (Reed and Harvey, 1992). Although each layer is composed of internally distinct and autonomous entities, each level and its entities serve as the building blocks for the higher level, with the latter being constructed in such a way that it can not be reduced to more fundamental layers. Moreover, and once formed, each level feeds back on the layer(s) from which it originates and dictates the conditions under which these layers operate. It is these reciprocal determinations that give the hierarchies an overall irreducible complexity. That is why the world as a whole and its hierarchical structure are both open and greater than the sum of their parts.

Before endeavouring to expose the main thesis in Bhaskar's transcendental realism, the discussion turns to transcendental idealism, the second tradition in our historical line of the philosophy of science.

### 2.6.2 Kant's transcendental idealism

The philosophy of Emmanuel Kant (1724-1804) came to posit two worlds upon human perception and thus to revive the role of the mind of spirit in the human existence. Kant attempted to steer a middle course between rationalism and empiricism. As demonstrated above, the former is conceived as a world entirely dependent upon the experience of the individual while the latter is a world made up of concrete objects. Kant emphasised the role of the mind in the restructuring of experience, where human beings are no longer seen as slaves of natural laws because the human mind is capable of creating and moulding the individual's experience. He further argued that all objects of any experience possible to us are nothing but appearances, that is, mere representations which, in the manner in which they are represented - as extended beings or as series of alterations - have no existence outside our thoughts (Sellers, 1976). Kant's transcendental idealism thus argues that the world is intelligible only because it is inscribed in the structures of human understanding. If there is indubitable scientific knowledge and an objective world order, Kant argues, it emanates from the universal categories of human understanding and not the obduracy of the world (Reed and Harvey, 1992).

This denial, by Kant, of the passionless empiricism and materialism is wide and varied with many later German philosophers having expanded on it. The present discussion is, however, concerned with the point at which transcendental idealism and transcendental realism part company. It is therefore imperative that the discussion considers both the areas in which the two faculties of philosophy are conjoined and where they differ. They seem to agree on the rejection of the empiricist account of science and its tired atomistic facts and their conjunctions. Furthermore, both transcendental realism and transcendental idealism subscribe to the notion that there could be no knowledge without the social activity of science. However, the two doctrines differ on the question of whether in this case there would be no nature also (Bhaskar, 1975). In transcendental realism, it is argued that the order discovered in nature exists independently of human activity. Transcendental idealism on the other hand maintains that this order is actually imposed by human beings in their cognitive capacity. Although Kant called his idealism "transcendental" in order to indicate that it enabled him to account for the existence of *synthetic a priori* knowledge, he had no recourse to the term transcendental realism because on his account of *synthetic a priori* knowledge, there could be no such knowledge of spatio-temporal objects if they were things themselves (Sellers, 1976). The point of tangency between the two faculties is clear from Bhaskar's own account:

> "According to transcendental realism, if there were no science, there would still be nature and it is this nature that is investigated by science. Whatever is discovered in nature must be expressed in thought, but the structures and constitutions and causal laws discovered...do not depend upon thought...This is...a philosophical position...whose intelligibility the transcendental idealist cannot thus, anymore than the empiricist, sustain" (Bhaskar,1975).

In further reducing the fortresses of both empiricism and transcendental idealism to rubble, Bhaskar employs a two-point criteria which, he says, any adequate philosophy of science must be capable of sustaining, i.e. the social character of science and the independent existence of the objects of scientific discovery. As demonstrated above, neither empiricism nor transcendental idealism can sustain the idea of the independent existence and action of the causal structures investigated by science. Although transcendental idealism rejects the empiricist account of science, it implicitly takes over the empiricist account of being, especially in its commitment to empirical realism and thus the concept of the empirical world. Bhaskar brands transcendental idealism as representing a mere improvement on empiricism. Transcendental realism thus departs substantially from these two philosophical foundations by proposing a new window through which to view the world.

### 2.6.3 Roy Bhaskar's transcendental realism

The discussion above makes reference to a two-tier test for a comprehensive philosophy of science - first, the social character of science and second, the science-independence of the objects of science. Only transcendental realism, Bhaskar (1975) argues, can sustain the idea of a law-governed world independent of human intervention, and it is this concept that is a necessity in the understanding of science. This view perceives objects of knowledge as the structures and mechanisms that generate phenomena and knowledge as a product of the social activity of science. The objects are real structures which endure and are operant independently of human knowledge and experience. They are neither phenomena (empiricism) nor human constructs imposed upon the phenomena (idealism). Transcendental realism is against empiricism in that its objects of knowledge are structures and not events. It is against idealism because the objects are intransitive, that is, they exist independently of human activity and perception. Further, in contrast with idealism, transcendental realism seeks to ask what characteristic features the world must possess for science and its knowledge to exist.

Thus, Bhaskar's transcendental realism depicts the world as a complex, emergent and multi-layered world of discrete entities and mechanisms (Reed and Harvey, 1992). It is an open world that consists of numerous sets of interacting components. It is this interactive complexity and openness that not only creates a basis for structural dynamics and accidents, but also gives nature itself an emergent pattern stuffed with evolutionary possibilities. Although Bhaskar developed his ontological vision from a critique of the philosophical foundations of the physical sciences, there is much in his exposition that points to the contemporary issues in social complexity. The transferability of the realist account into the social world is of utmost importance in this project and therefore deserves appropriate detail in a general discussion that aims to pin down a definite epistemological foundation for the research.

## 2.7 Discussion: Realism in social complexity research

Transcendental realism is clearly the most comprehensive epistemological foundation for the complexity project, at least as it applies to methods of inquiry in physical sciences. What seems to be contestable, however, is whether this realist theory is extendable to the social sciences realm as well. This is a correspondence that is dismissed by Williams and May (1996) who argue that it is possible to be a realist about the physical world but not about the social world. Their justification is that the social world consists of ideas that cannot be treated in the same way as physical objects. They come out quite critical of those (of us) who argue that the social world is real and exists independently of the ideas that we have about it. To some extent their argument is even supported by Bhaskar (1998) himself, who in differentiating between the physical and the social worlds notes three things: first, that unlike natural structures, the social structures do not exist independently of the activities they govern; secondly, unlike natural structures, social structures do not exist independently of the agents' conception of what they are doing in their activities; and thirdly, unlike natural structures, social structures are only relatively enduring. Williams and May (1996) crown off their argument with an illustration from economics - that national economies cannot exist independently of the people who experience their effects and contribute to them. This cannot be further from the truth because after all the people themselves are the fundamental building blocks of economies, just like molecules and atoms are foundational to physical objects. But this justification totally misses the point about the naturalist thesis.

Whilst acknowledging the various sources of mismatch between the natural and the social worlds, the argument that is championed in this study is a commitment to a special kind of naturalism, particularly that which is expressed in the notion that the social world (national economies inclusive), like the natural world, consists of sets of complex self-organising systems whose coherence is a product of the interactions among the multiple agents that constitute the system. Like the natural world, society exists independently of "our" perception of it. This sounds like too naïve an assertion to make in the light of the profound differences between the two spheres of existence. However, the key word here is that which is in quotation marks *"our"* and not the mere claims of independent existence of the social world from our knowledge. Who are the "we" referring to about "our" perception? It appears that to the critics of this assertion in particular and to naturalism in general, the "we" refers to the subjects of social inquiry - consumers in an economy, individuals in a family, families in a community, corporate entities in an industry, etc. - rather than the persons (researchers) trying to find explanations about the social world. The grand hypothesis of this study makes reference to urban regeneration as a subject of emergence rather than a necessarily planned process. Implied in this argument is the supremacy of the independent existence of the emergent urban social order from any central planning authorities and that it is from this social complexity that rich decisions about the urban problem emerge. The argument is further qualified by the inclusion of a premium on the availability of an enabling environment for the emergence of such social connectivity, which argument was also illustrated by McKelvy (2001) in his concept of Distributed Intelligence. The thesis does not entirely deny the influence of central control but that such influence should be channelled in a manner that is aware of the complexity of the urban system and therefore takes greater care not to breach the evolutionary pattern of social cohesion and involvement in the decision-making processes. Perhaps this would also be one way of accommodating Gell-mann's thesis of maladaptive schemata, particularly the part that relates to influential individuals and how they may contribute towards the survival of maladaptive schemata.

Sayer (2000) equally upholds the naturalist complexity-compliant position in his explanation of realism in the social sciences. He argues that even if the researchers and the practices under study do depend on shared concepts, this does not mean that the practices are influenced by "we" the researchers. In studying contemporary political issues, for example, the researcher may use the same concepts as politicians but it does not follow that the resultant political landscape is a product of the researcher's analysis. The political discourse exists as it is regardless of whether the researcher signifies it or not. Sayer (2000) also leaves room for the acknowledgement of selected influence from social theories but is quick to point out that much of the work of social scientists only casts limited influence, often where academic reading is followed by similar articulations in lay society. This, he argues, is not because academics have influenced events but because the scholars have anticipated a change which would have happened anyway even in the absence of their anticipation.

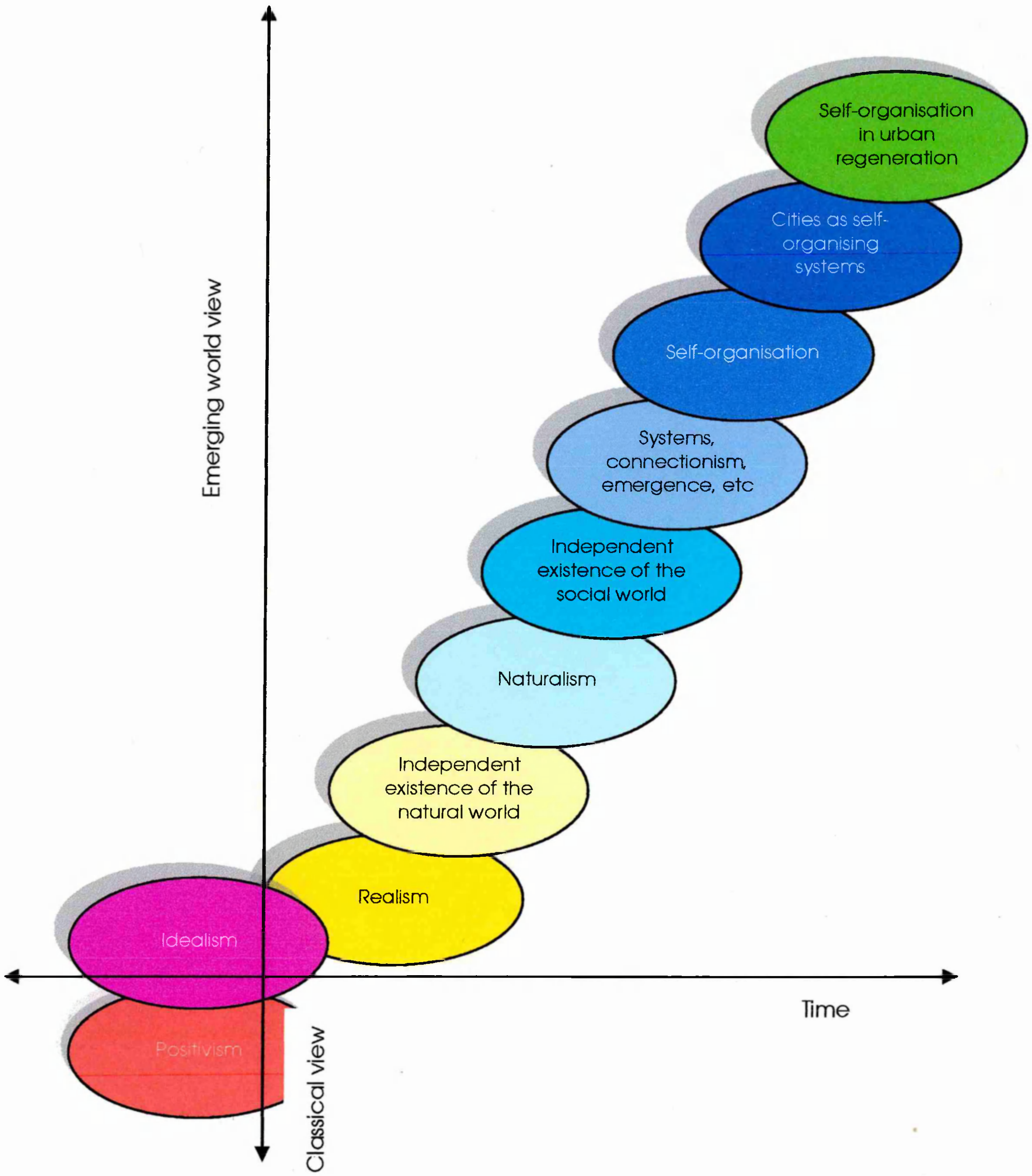
Finally, despite identifying the three dimensioned distinction between the social and the natural worlds, Bhaskar did not abandon his commitment to naturalism. In the Possibility of Naturalism (1989), he attempts to ascertain the extent to which the discovery of knowledge in the social sciences resonates with the canons of natural science. He perceives society as being layered, complex, structurally open, and historically constituted. He further suggests that any account of the social existence must identify those layered entities and mechanisms that produce society. To achieve such an undertaking, it would be necessary to establish society's material-ecological foundations, the nature of human agency, and the role played by human intervention in building social and cultural order. Bhaskar thus adopts a realist approach to social relations, arguing that society and the human agent, as structural and material components of a historical entity, are both irreducible. Individuals do not create social reality out of conscious desire because there is always a stubborn and unyielding prior reality, which is a set of objects, social relations, and institutionalised motivations that constitute society (Reed and Harvey, 1992).

Before leaving this area it is worth pointing out that even if the subject matter (the "we") were to be understood as the general populace within a social system and not the researcher and / or the central planner, there would still remain a conceptual misplacement of ideas in this angle of criticism. The argument that human agents anticipate the future and can, therefore, affect the eventual direction of a social system is of course a correct view but that is the very nature of such systems. The fact that consumers, as agents in an economy anticipate the future and attempt to build individual predictive models is a fundamental premise upon which the economy is founded and sustained. If these intrinsic qualities of anticipation and prediction (or better still, choice) were to be stripped off the consumers in their individual and collective entities, this would amount to a total disturbance of the economic DNA and the eventual demise of the economic system itself. This is because the agents (consumers) would no longer exist in the form that gives rise to the emergence of an economy, just like the natural world would cease to exist if atoms and molecules were to withdraw their obedience to the force of gravity. The analogy suggests that in both of these spheres of the world, the odds of the atomistic agents behaving in the manner suggested are close to one in infinity. What the critics of this part of naturalism should recognise is that it is not necessary to seek congruency in the behaviour of the atomistic units of the natural and social systems. Rather the important point is that both spheres of existence are driven and sustained by the dynamics of relations among the constituent elements.

Bhaskar's sociological naturalism thus harmonises well with the emerging project of complexity in social systems. The harmony is reflected in a number of similarities between the two ways of understanding the (real) world. Both sociological naturalism and social complexity endorse an approach that perceives nature and society as open and emergent systems. They both acknowledge that the subject matter of the reality they study is hierarchically structured, as well as being interactively and stochastically complex.

Furthermore, each of the two viewpoints reserves a strong commitment to holism in approaching problems of the real world. The final point of intersection is that they both see nature as a self-organising system and they do so without falling into the traps of mysticism or anthromorphism. Here, then, is the perfect epistemological premise upon which the complexity project, in its diversity, is anchored. The origins of the epistemological location of the study, therefore, rests on the realist account of the natural and the social world, as illustrated in the diagram in figure 2.3 below.

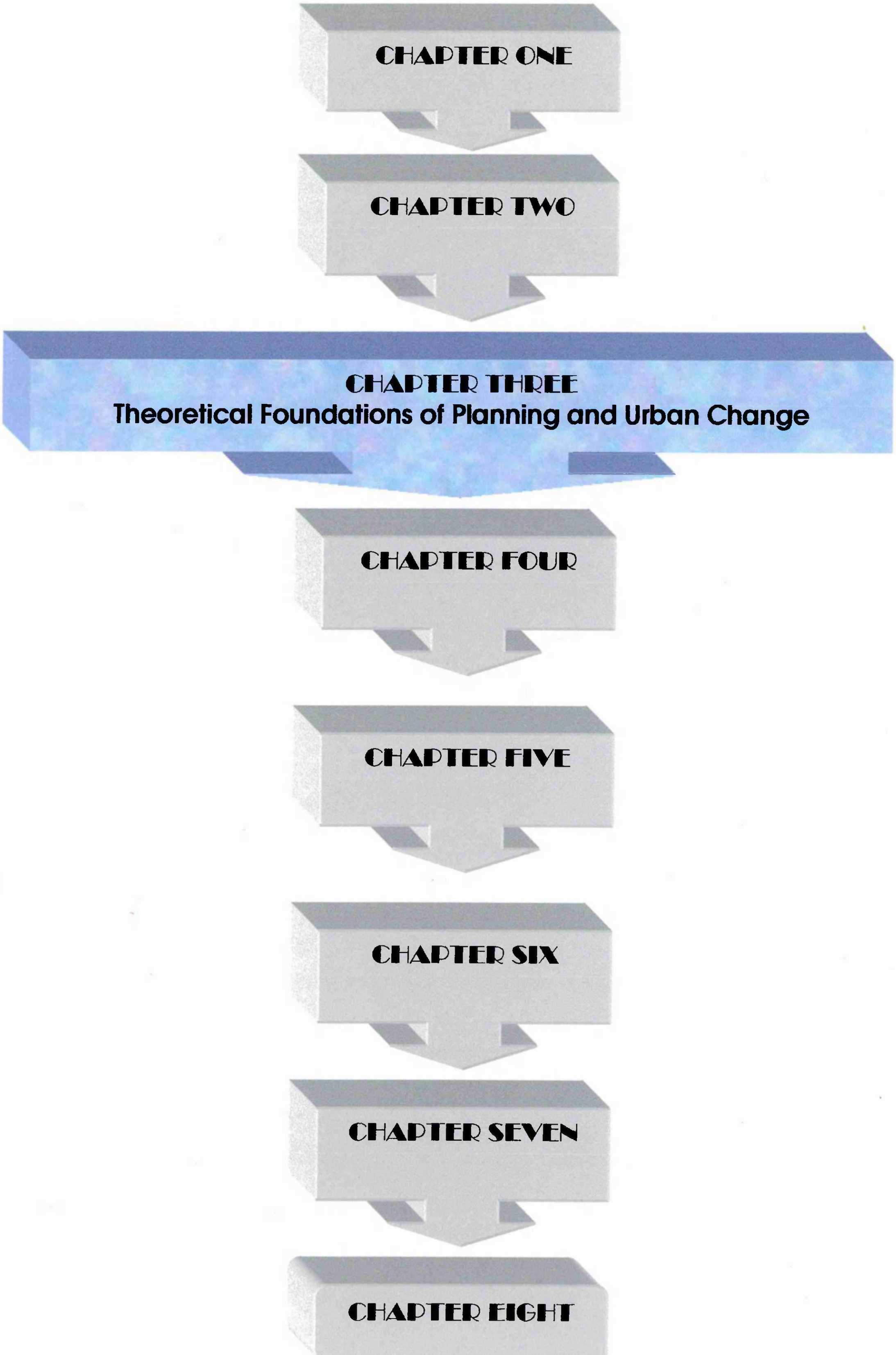
**Figure 2.3 Epistemological location of the research**




In Bhaskar's "A Realist Theory of Science" (1975) and "the Possibility of Naturalism" (1989), coupled with clearer accounts from his exponents like Sayer (2000), is found a comfortable niche for the core epistemological theme for this research - that the social world is a complex self-organising system that exists independently of the researchers' (or central planners') perception and interpretation of it.

## 2.8 Conclusion

Complexity theory is still in its infancy, having been born just about two decades ago. However, it would appear that the tendency to think in complexity terms was already manifested in many spheres of the physical and social sciences even prior to the emergence of the new science in the 1980s. It is for this reason that despite the relative novelty of complexity on the research platform, there is no need to shop around for fresh philosophical foundations upon which the theory stands. Browsing through the voluminous literature on contemporary philosophy of science (the social included) immediately reveals that the ethos of complexity are squarely embedded within the realist theory of science postulated by British Philosopher Roy Bhaskar about ten years before the birth of complexity. The central theme of this account, which renders it attractive to complexity lies in its rejection of reductionism and the pronouncement of the fundamental notion that the (real) world has an existence independent of our perception. Upon this premise, the study derived renewed impetus to uphold the argument that urban regeneration processes are more of a product of emergence than necessarily planned processes. The processes are a subject of complexity and have a natural existence that does not depend on the perceptions of researchers and professionals operating in the urban system. The extent of appreciation (if any) of this important notion is also tested in the next chapter which looks at past and contemporary theories of planning and urban change.


CHAPTER ONE
CHAPTER TWO
CHAPTER THREE
Theoretical Foundations of Planning and Urban Change
CHAPTER FOUR
CHAPTER FIVE
CHAPTER SIX
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CHAPTER EIGHT

# CHAPTER 3: THEORETICAL FOUNDATIONS OF PLANNING AND URBAN CHANGE

## 3.1 Introduction

Chapter two provided a general introduction to complexity theory as well as unveiling the epistemological platform upon which the thesis of the study rests. This third chapter sweeps through some of the alternative theories of urban change and approaches to urban planning. The task is to assess their efficacy in the face of the crucial paradox of the existence of a plethora of tested theories and models of the urban system on one hand and the persistence of the urban problem on the other. To achieve this aim, the chapter is divided into four main parts, starting with a discussion of the four broad conversional approaches to planning and /or the understanding of the urban system. This is followed by an outline of specific (past) theories of urban change, including the theory and practice of town planning. The third part is devoted to a special reference to the dilemma facing decision-makers in planning and urban regeneration. This should then provide a springboard upon which to discuss, in the final part, the potential of complexity theory in understanding cities and urban regeneration processes.

## 3.2 Approaches to urban planning

Because planning is by its nature a multidisciplinary undertaking, there are various, albeit interlinked, issues that relentlessly chock planners in their quest for solutions to the urban problem. The issues principally revolve around the four main approaches to planning that include pluralism, public bureaucracy, reformism, and Marxism (Blowers, et al, 1982).

### 3.2.1 Pluralism

The pluralist approach perceives society as consisting of a myriad of interest groups competing for control over government action through democratic processes. Society is seen as segmented into hundreds of small interest groups, with overlapping memberships, different power relations, and a multitude of techniques for influencing decision-making processes. The power base is distributed in such a way that no one particular group is dominant over any segment of society. Different groups organise themselves into various combinations according to their issues of interest. Whenever a particular interest threatens to gain dominance, opposition groupings will emerge to challenge the powerful group and in so doing, helping to maintain "equilibrium".

It has been argued that pluralism is the dominantly accepted social theory in the UK. Indeed, there has been a remarkable increase in pressure group activity since the mid 1960s and this is nowhere more pronounced than in the realm of land use planning (Blowers, et al (1982). The final decade of the 20th century particularly witnessed an increased amount of community participation in various spheres of urban decision-making processes. This has been paralleled by a considerable amount of eclecticism on the part of the planning system, which culminated into the Planning Green Paper and subsequent enactment of the proposed changes to the planning system as chapter four suggests. Though still in their early stages of implementation (at the time of writing), the changes are meant to put in place a more flexible and locally accessible planning system. Resident consultation in the decision-making process has become an integral part of urban regeneration programmes, if the literature in local government structures is anything to go by. This was also endorsed by the Prime Minister Mr Tony Blair in a foreword to the Code of Practice on Consultation:

> Effective consultation is a key part of the policy-making process. People's views can help shape policy developments and set the agenda for better public services. But we also need to make the process of consultation less burdensome and easier for people to engage with. (Blair, 2004).

### 3.2.2 The power of public bureaucracy

The emphasis on the power of public bureaucracy is squarely enshrined in the studies of local authority decision-making processes, especially in the field of housing and land use planning. This school of thought views local authorities as complex structures, difficulty to penetrate and therefore largely impervious to influence by local residents. Even within the local authorities themselves, the relationship between councillors and officers does not appear to be, in practice, what it is conceived to be in constitutional theory. Indeed, the top-down approach to decision-making, whereby decisions are made *by* the local authorities *for* residents has been put to question. Such a structure is considered as too rigid and does not (always) lead to positive results. However, it can also be argued that a completely deregulated regime is equally undesirable. This research advocates for a fine balance between these two extreme ends of decision-making processes in planning and urban regeneration (see the edge of chaos hypothesis in chapter 2).

### 3.2.3 Reformism

Reformism is the belief that gradual changes in a society can change its fundamental structures. In planning the reformist approach is identified with a selection of academics, trade union activists, and left-wing political groupings. It is particularly associated with issues of poverty, homelessness, and poor environmental conditions. Activism is powered by humanitarian and egalitarian aims, involving positive discrimination in the redistribution of resources. The primary challenge to the planner is perhaps how to channel these concerns into a unified body of decision-making process.

A fundamental weakness of the pluralist and the bureaucratic approaches to the study of urban issues and land use planning is their neglect of economic factors. The two approaches consider economic issues as constituting a separate area of study from sociological and political questions and that it is therefore not necessary to link the two areas of concern. Marxism attempts to bridge this gap.

### 3.2.4 Marxism: The political economy of urbanism

Although Karl Marx had very little to say about planning, the theory of cities is fairly laden with his ideologies. Marxism sees cities as systems of big forces between the oppressing and the oppressed, the capitalist and the working class, the political infrastructure and the politico-ideological superstructure, as well as many other tensions working within the urban existence (Castells, 1978). However, it is the relationship between the development (or evolution) of urban systems and the capital accumulation processes that seems to take the centre stage of the Marxist view. Urban problems are perceived as the local by-product of capital accumulation processes:

> "Since he is not a financier, that is to say, he seeks something other than the average rate of interest on the capital he advances, the developer will not operate in the field of housing unless he can convert the advantages provided by the environment into profits". (Lamarche, 1976: 96).

The landscape of capitalism is full of tensions itself – one basic example being the forces working towards spatial agglomeration and processes working towards dispersal over space. Such tensions and many other foundational principles of urban planning are translated into numerous theories of the urban system.

## 3.3 Theories of planning and urban change

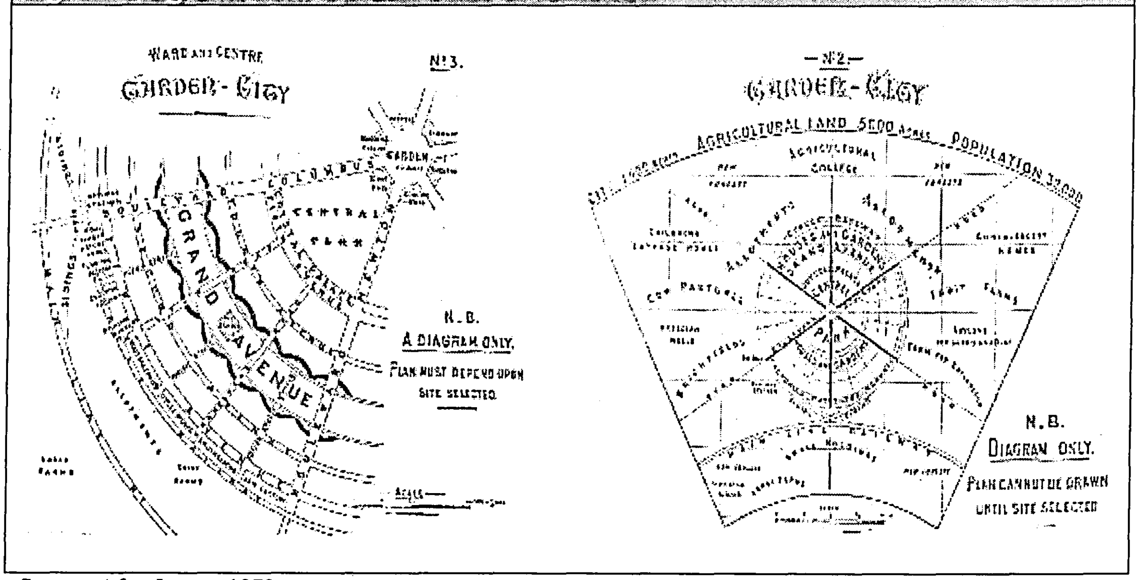
The complexity (complicatedness) inherent within the internal workings of the urban system has been recognised by researchers working in this environment. Many of them, especially the young generation of enthusiastic professionals are now having to come to terms with the harsh reality of the challenges posed by the city as a complex system. As early as the late 1960s, they clearly understood that in order to tame the urban system, an important prerequisite was to understand the characteristics of the system, a task they came to acknowledge as too mountainous and actually close to the fringe of their skills (Eldregde, 1967). Classical professional town planners, flanked by a myriad of experts from other related fields of study, have had their fair share of involvement in the urban system, but the sheer complexity of the system demands that even higher levels of human thought and skills are deployed. In the search for such improved levels of understanding, it's appropriate to start with a review of urban theories that have been tested in the past and highlight the notion that these have only managed to scratch the urban problem. There are numerous theories and theorists of urban change, although Portugali (2000) suggests that they all came from three quarters of the world. From one corner, came the whole scientific arsenal of location theory and spatial analysis - the land use rings, rent bid curves, hexagonal central places, etc. These provided explanations. From the second direction came the Radiant City and the City of Tomorrow as postulated by Ebenezer Howard and Le Cobusier with their super blocks and wide highways. These provided the vision - the image of the city of tomorrow. From the third direction came systems theory with its acclaimed ability to cut across disciplinary boundaries. At the battle-front of this army of professionals was the rational comprehensive planner. The harsh reality is that despite this horde of experts and visionaries having been in existence and operational for many years, the urban problem is still haunting us. The urban system has just refused to be planned and tamed. Where or how did all these urban theories and theorists go wrong? The consolation to the lay reader is that these same questions are beginning to come out of the planning experts themselves, as Chapter One demonstrated. We begin the search for answers by browsing through the material contents of these alternative theories and models.

### 3.3.1 The Garden City and the Radiant City

The period spanning from the last decade of the 19th century up to the early 20th century was the critical moment in the evolution of modern town planning in Britain and elsewhere. This was heralded by the utopian reform movement in which the prominent figures are Ebenezer Howard with his Garden City and Le Corbusier with his Radiant City idea.

Although by far the most acknowledged, Ebenezer Howard's vision of a garden city was heavily influenced by earlier utopian thinkers notably Edward Bellamy's (1888) book describing a technological socialist future, William Morris' vision of a reconstructed London, as well as the idea of new industrial colonies away from big cities proposed by economist Alfred Marshall (Ward, 1994). But what did the Garden City vision actually stand for? The answer lies in the realisation that Howard was a non-Marxist utopian socialist who sought to pursue socialism without inviting class conflict. His Garden Cities of Tomorrow, published in 1902 outlined a utopian socialist alternative to the evils of the existing urban society, especially the density concerns of London (Blowers, et al, 1974). The vision was for a social city with decentralised networks of individual garden cities, each with a population of 3,000 surrounding a larger city of 58,000 inhabitants. The garden cities were to be devoid of slums and smoke and were to be of high quality housing, well planned development, large open spaces, and with a green belt enveloping each city. The key ideological pursuit was to be communal ownership of land purchased at prices equivalent to agricultural values to ensure that the garden city residents benefited from the windfall gains arising from urban development. Although many other aspects of the garden city would be owned and controlled collectively, Howard's idea was not to completely do away with private enterprise. The vision is summarised in his own diagrams (figure 3.1) in the book published in 1902.

Fig. 3.1 Diagrams from Garden Cities of Tomorrow




Source: After Lucey, 1973

All seemed to have been set for the garden city to take off, but not before it was disillusioned by scepticism and apathy from many sources. To start with, Howard had found it difficult to secure support from the mushrooming labour movement as well as from intellectuals who painted the vision with all kinds of apprehension. It also soon came to light that many of the few supporters erroneously equated the garden city revolution to a model of environmental reform and they were actually not interested in the wider reform movement as envisioned by Howard (Ward, 1994). It would appear that even outside the working class and intellectual wings, there was an equal thrust of scepticism as suggested by the quote from the Times Newspaper of 19th October 1898:

> "An ingenious and rather entertaining attempt – the only difficulty is to create it" (October 19, 1898)

Could they all have been wrong in casting doubt on Howard's vision? Probably they were, because it soon became apparent that Howard's ideas were unique from other utopian postulations in that they were quickly translated into action. For example, in 1899, the Garden City Association was formed to promote the idea of the garden city and in 1903, Letchworth, the first garden city was conceived. Plans for this city were prepared by two architects, Raymond Unwin and Barry Parker, whose designs, however, substantially went beyond the diagrammatic proposals in Howard's drawings to outline a carefully zoned plan in which emphasis was placed on segregation of industrial centres from residential and shopping centres (Blowers, et al, 1974). The original vision of the garden city continued to be diluted through a series of compromises in the implementation of the plan, although there was a resilient tendency towards a holistic approach. This continued to manifest itself in the wider notion of town planning in the decade after 1900. In later years, the practice was simply detached from the rest of the garden city idea.

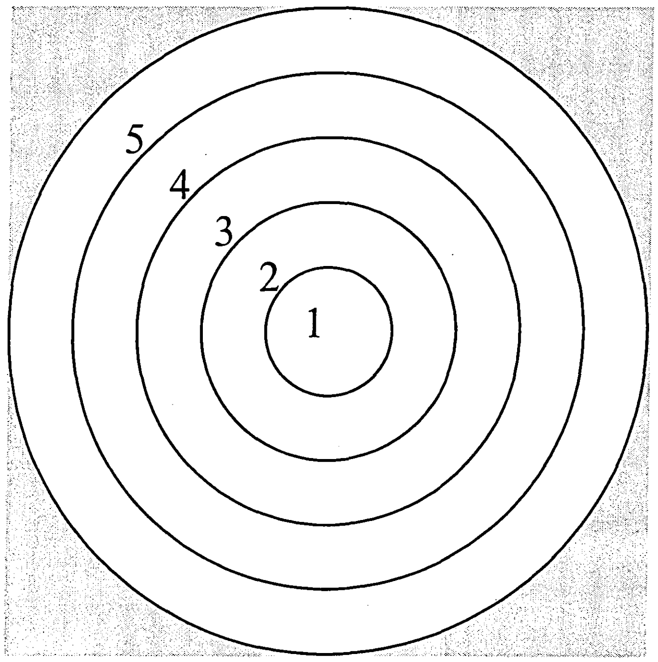
A rival parallel vision to Howard's Garden City was to be found in a self-trained Swiss-born architect Le Corbusier. Unlike Howard, Le Corbusier sought to pursue an egalitarian conception of a city which did not advocate for an escape from the city. His basic argument was that the big city itself was amenable to perfection. The hypothetical city was consequently larger than Howard's, with a population of 3 million inhabitants. His vision came to be associated with modernism largely because of its high appetite for central control in the form of strict zoning principles and abolition of many traditional precepts of the urban form. In his model, the central areas would be dominated by large office blocks and crossed by major transportation routes. The immediate vicinity would be reserved for luxury apartment blocks for the elite and further on the lower density satellite towns for workers and factories (ibid). His vision received wide acclaim among many followers in Mainland Europe. In Britain, however, it was not until the 1930s that modernism began to express itself in the planning system. This happened at a time of major shifts in housing policy towards slum clearance and the increasing reliance on flats as a way of solving the housing problem.

Leaving the world of utopia and continuing on the path of searching for a solid platform upon which to understand cities and urban change should take us straight into the frontier phase of location theory and spatial analysis, whose origins are traceable to the work of von Thunen and his isolated state.

### 3.3.2 von Thunen's Isolated State

von Thunen's vision of an isolated state was the founding principle for a brand of urban theories that came to be known as location theory and spatial analysis. Although his vision was in relation to agricultural and political economy, this was quickly extended to and translated into a theory of urban land use. The starting point is a statement of the hypothetical scenario contained in his vision: Imagine a very large Central Business District (CBD) at the core of an urban plane, devoid of all manner of transport communication links. Further assume that throughout the urban plane, the land is capable of sustaining all kinds of land use, yielding the same utility (Hall, 1998). Moving away from the CBD, the plane turns into wilderness, thereby further de-linking the urban area from the outside world. There are no other centres on the plane implying that the city is the sole supplier of urban products and services in return for labour from the surrounding hinterland. The sources of raw materials are located within the vicinity of the CBD. This concludes the hypothetical scenario of von Thunen's Isolated State as translated into urban land use, and introduces the problem area in the form of imminent questions: What pattern of land use will emerge from these hypothetical conditions? How will different land uses be affected by their distance from the centre of commerce, assuming that decision-making is conducted rationally? From these questions, von Thunen proposed an answer that still serves as the preamble to the economic principle of marginalism, some 50 years prior to Walras' translation of the whole concept into the basis for modern economic theory (Portugali, 2000). It is now almost a subject of platitude to say that near the CBD will be located those land uses that are sensitive to distance from the centre. This will have the overall effect of pushing to the periphery those land uses that are cheaper to transport, giving rise to a pattern of land use illustrated in figure 3.2.

**Fig. 3.2 von Thunen's land use patterns**




**Key**

1 Central City
2 Intensive farming and Dairying
3 Forest
4 Extensive Field Crops
5 Ranching and animal Products

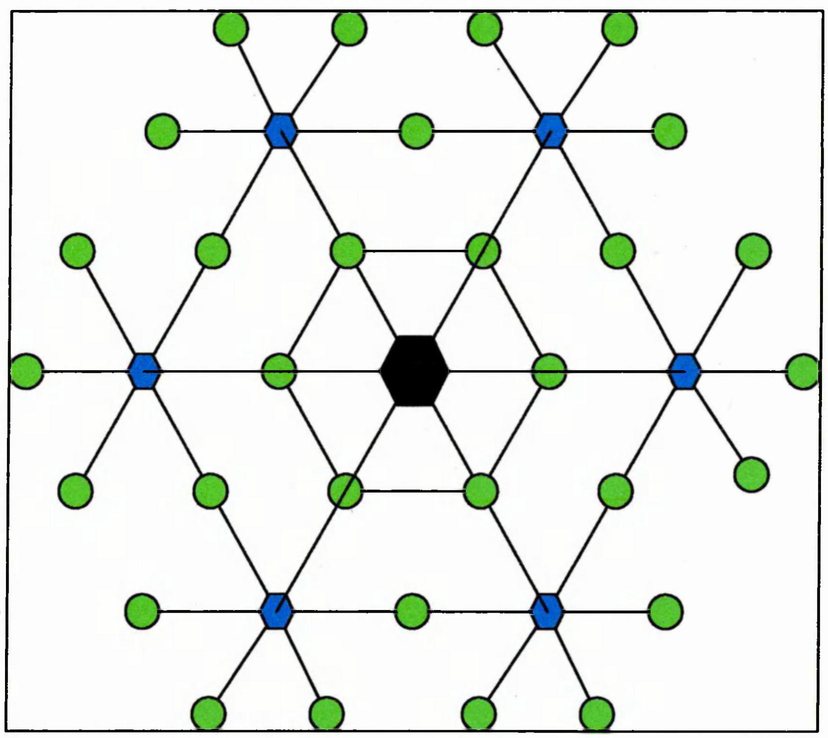
The land use for the entire urban system will change for each ring according to dependency on transportation costs with respect to the CBD. Although the principle behind the Isolated State has played a major part in informing present day urban economics and geography, its overall contribution to the understanding of the urban system is still mystified by its myopic vision and assumptions. Such assumptions as rationality in decision-making and isotropic landscape are an attempt to engineer the urban system through quasi-experimental methods discussed in the previous chapter. Apart from influencing modern economic theory, von Thunen's theory also catapulted another brand of urban theories under the general theme of location theory and spatial analysis.

### 3.3.3 Location theory and spatial analysis

Location theory was developed by Christaller (1933) in his work on central places in Germany and August Losch (1945) in his economics of location (Hall, 1998). It has been argued that if von Thunen uncovered the principle of marginal utility some 50 years before its time, then Christaller and Losch invented a genuine systems theory several decades before Bertalanffy (1968) published his general systems theory (Portugali, 2000).

Christaller's central places theory attempts to explain the spatial distribution of urban form. His work centred on the size, the number and the geographical distribution of cities. He started from a hypothetical situation which included a central city and its dependent towns as shown in figure 3.3.

**Fig. 3.3 Christaller's central places**

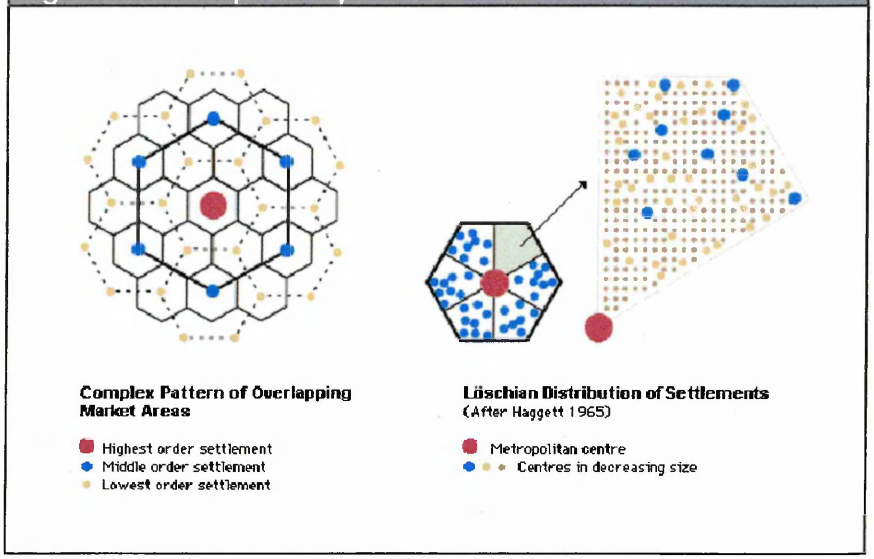


Adapted from Watkins, 2003

The black hexagon in the diagram represents the central city. The six blue hexagons represent the satellite cities of the central city while the thirty green dots are the retail distributors of the "blue" hexagonal cities. The central place (in black) is specialised in selling various goods and services, and the market area is a sphere of satellite settlements of consumers who travel to the central place. The main function of the central city is therefore to supply goods and services to the population in the surrounding hinterland. The observations that came out of this hypothetical central city enabled the elaboration of an important theory of spatial structure and order, which still influences much of the studies in urban, economic and transport geography. Many of the criticisms that have been levelled against central places theory point to the service sector-orientation of the theory. The general argument is that human settlements may develop as a result of other factors such as the locality of natural resources. By holding such factors constant, Christaller's theory is reduced to a set of positivist assumptions that are quickly overtaken by the harsh realities of the multidimensional urban system. The assumptions of uniform distribution of population and isotropic landscape are both way off the grounds of physical and social reality. Most importantly (to the thesis of this research), the theory is essentially static in that it seeks to explain the existence of a regional spatial structure but falls short of explaining how that structure evolves and how it might change in future.

Unlike Christaller, Losch kicked off his theory by assuming several interdependent isolated states on a uniform plane similar to von Thunen's isolated state. Losch further hypothesised that an increase in population and economic activity would attract more isolated cities. Through competition and general spatial equilibrium, the whole region would become so full that at some point in time it would reach a spatial equilibrium in the form of a complex system of central places.

Fig. 3.4 Losch's Spatial Equilibrium Model.



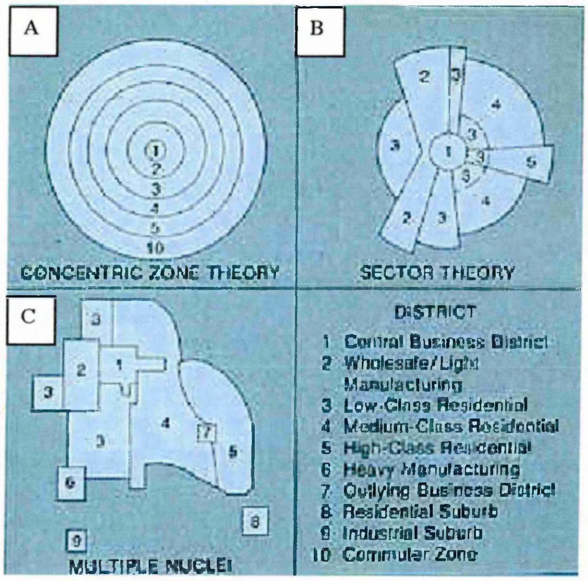

Source: People Hofstra Education (2003)

Apart from being more recent, Losch's theory appears more robust than Christaller's because the latter is centred on products and services while the former is broader, embracing a general theory of location. Their common denominator is that they both focussed on the economic aspect of urban land use.

However, location theory accommodates yet a second dimension of the city apart from the economic dimension. It is the view of the city in ecological terms. This image of the city has its origins in the American studies particularly in Park's (1925) seminal book - The City. It is a view that perceives the city in terms of continuous complex interaction among individuals, communities, and their common biotic environment. The individual entities are kept in motion by survival motives which manifest themselves in various forms of symbiosis, competition, domination, invasion, succession, etc. It is these complex interactions that drive the entire (ecological) urban system. According to this view, the order that exists in the eco-city is defined in terms of ecological, cultural and political order. Following Park's seminal essay, other ecological images of the city were conceived. The most pronounced was the model developed by Burgess (1927), who described the city as an entity that grows radially from its centre, forming a series of concentric zones similar to those of von Thunen's isolated state. The second exponent of the ecological city movement was Hoyt (1939), who suggested a sectorial morphology of the city based on his empirical studies of rent gradients in American cities. Though similar to Burgess' model, Hoyt's image of the city suggested growth from the centre along transportation routes giving rise to a sectorial pattern shown in figure 3.5 (B).

Burgess' and Hoyt's models were later integrated by Ullman and Harris (1945) to construct a multiple nuclei model that suggests that growth starts from several central places rather than one.

**Fig. 3.5 Three generalizations of urban land use**




**Key**

**A** Concentric Zone Theory
**B** Sector Theory
**C** Multiple Nuclei Model

Source: UNC Charlotte University, Geography Department, URL

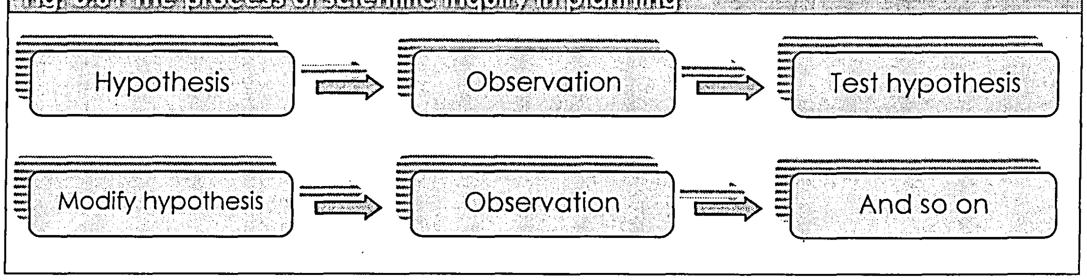
These exponents of von Thunen's isolated state equally appear to have fallen into the same ideological pit of avoiding complexity, a praxis that came to be accepted and championed by classical economic theory through the naïve usage of ceteris peribus instruments discussed in the previous chapter. They stayed in that false niche for as long as it took for the general systems theory of planning to emerge.

### 3.3.4 Planning Theory

One of the novel definitions of planning theory is that proposed by Campbell and Fainstein's (2001) Readings in Planning Theory. Essentially, theirs is more of an acknowledgement of the difficulty associated with defining the subject matter of planning theory than an attempt to cling to self-legitimisation. In highlighting the definitional dilemma, the two authors have identified four principal reasons that work together to constitute the difficulty. The first is that many of the key questions surrounding planning theory belong to a much broader body of inquiry with regard to the role of the state in socio-spatial transformation. As a result, planning theory seems to overlap with the general theories of social sciences so much that it becomes hard to identify its boundaries. Secondly, the distinction between planning and related professions such as architecture is not mutually exclusive. There are certain elements of planning that are also done by other professionals and there are certain tasks that planners do, which can be considered as lying outside their remit. The third reason relates to the question of whether planning is defined in terms of its object (the land use patterns) or as a process of decision-making. The fourth is founded on the notion that while many fields of study are defined by their specific methodologies, planning heavily relies on borrowed methodologies from other disciplines. The gross effect of these four points is that it is not easy to take stock of the actual content of planning theory. However, one important aspect of planning theory is its commitment to a relentless search for a desirable future. While utopia specifies a desirable future state without detailing the means of achieving it, planning theory is charged with specifying a desirable future state as well as detailing the means of attaining it (Blowers, et al, 1974). This is consistent with Chadwick's (1971:63) definition which perceives planning as a process of human forethought and action based upon that thought.

In Britain planning started as an interventionist activity to correct the shortcomings of private enterprise that paralleled the Industrial Revolution. It was recognised from the early stages of the Industrial Revolution that the private motive was capable of translating into huge public costs in the form of failure to provide adequate urban infrastructure and widening the gulf between the rich and the poor. This invited a chain of bureaucratic control from local and central government over development, which has continued to date and takes two forms: active and passive intervention. Active intervention involves taking the lead in the provision of urban infrastructure such as roads and housing. Passive intervention on the other hand is manifested in the form of giving and withholding planning permission to steer a defined course of urban development. Other sources of influence in planning include the role played by politicians through their control over investment. Together, these activities of private enterprise, the planners and politicians have often been taken as the determinants of the future (Blowers, et al, 1974). The basic principles of the current system were established by the Town and Country Planning Act 1947 (Kitchen, 1997). Although there has been a series of changes, the system remained essentially the same for most of the latter half of the 20th century. It is only the new Planning Act (2004), heralded by the Planning Green Paper (2002) that appears to have substantially shackled the system. Up until the 1960s, these future seeking activities have been conducted via a set of blue prints under the general theme of rational comprehensive planning. Unlike many of the mostly utopian urban theorists identified above, the rational comprehensive planner conducts his or her planning activities in a manner that conforms to scientifically defined courses of action, summarised in figure 3.61.

Fig. 3.61 The process of scientific inquiry in planning




Source: After Chadwick 1971

It can be deduced from the above that the process is based on a coherent method of thinking about the future. The harsh reality, however, is that in practice this process is reduced to a mere set of ad-hoc efforts to tackle the urban problem. The process does not address such important questions as the appropriate balance of central control, and/ or private enterprise in designing the future. A further source of challenge comes from the realisation that society is so complex that it can not be understood or controlled in a linear fashion suggested in figure 3.61 above. The appreciation of this fundamental notion had its first expression in planning at the emergence of systems thinking.

### 3.3.4 A systems view of planning

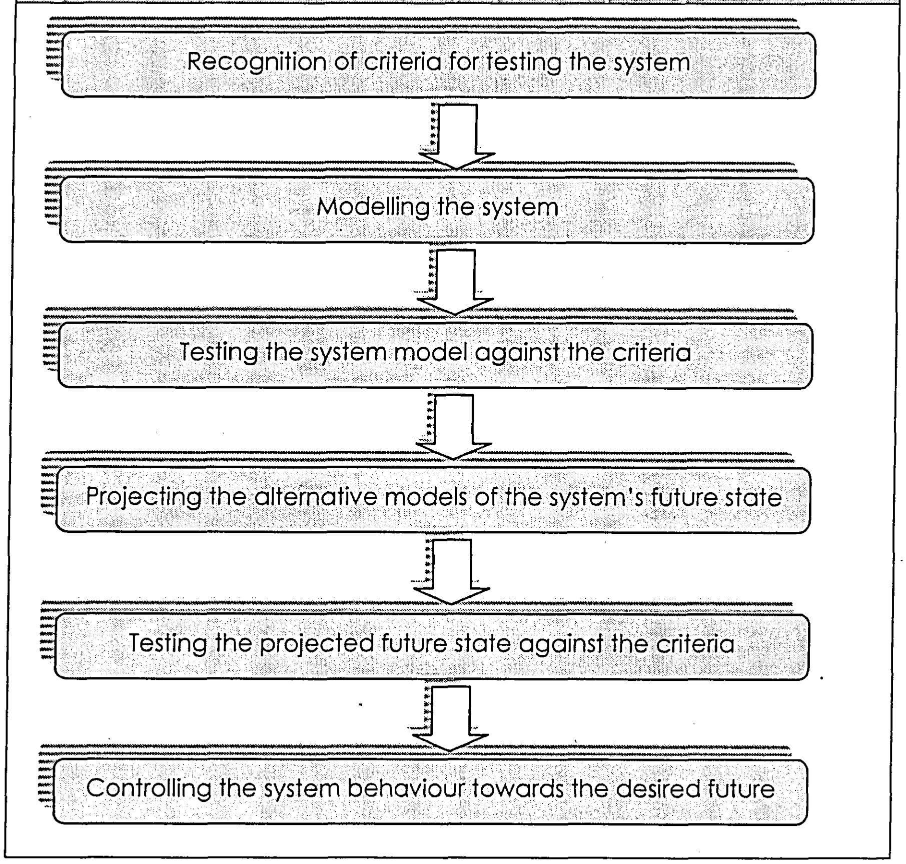
To understand the systems view of planning, it is necessary to unpack the contents of general systems theory itself. Systems theory is basically concerned with problems of relationships, of structures, and of interdependence, rather than with the constant attributes of objects (Katz and Kahn, 1966). There are three major types of systems – a natural, a closed and an open system. A closed system is independent of the influence of its environment. It focuses on internal components such as variables of size, location, ownership, etc. A natural system encompasses many client-oriented service organisations such as schools. Both the closed and the natural systems view-points tend to perceive organisations as closed systems. The open systems view on the other hand treats organisations as open and dependent on the environment through interconnections with external and internal multiple agents. It is the open systems approach that counts as general systems theory. Its founder, Ludwig von Bertalanffy, was concerned about the growing compartmentalisation of science:

> "The physicist, the biologist, the psychologist, and the social scientist are, so to speak, encapsulated in a private universe, and it is difficult to get word from one cocoon to another". (Bertalanffy, 1968)

In fostering his intellectual movement, Bertalanffy argued that general ideas could have relevance across disciplinary boundaries. It also endeavoured to demonstrate that many of the most important aspects studied by both social and physical scientists can be pooled together under the general theme of systems. The effect of general systems theory in other disciplines was to stimulate new applications, such as operations research, systems engineering, and systems planning.

Much of the interpretation of general systems theory into urban planning is associated with Chadwick (1971) from whose book the above title is drawn. Chadwick's systems model is essentially a modification of the process of scientific inquiry represented in figure 3.61 above. His departure from conventional rational planning is at a point where the problem is concerned with complex (complicated) systems, in which case the process must be extended to include elements in figure 3.62.

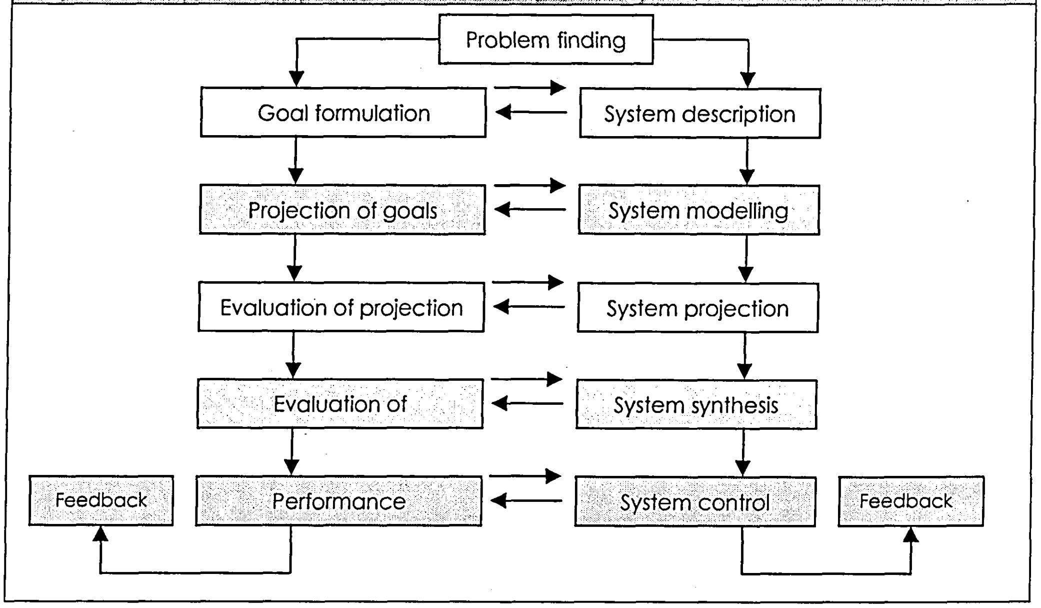
Fig. 3.62 Chadwick's scientific inquiry of complex systems




After Chadwick, 1971

Chadwick (1971) further suggests that any such process will start with two directions of inquiry (and not one) because the recognition and description of the system and the formulation of criteria for its testing proceed in parallel. There is also a need to model the system in order to test it. The net result is a rational model of system planning, shown in figure 3.63.

Fig. 3.63 A system approach to rational planning




After Chadwick, 1971

Admittedly, the systems view of planning was a milestone achievement in planning theory because it tilted the perception of the urban problem from arrogant positivism to a more eclectic discourse. The most prominent legacy of positivism that still crept into the systems view is perhaps the commitment to a future-seeking endeavour. The problem with this kind of undertaking is that the future is not something that happens to us. It is constituted in part by current decisions as well as being a product of chance and forces that lie outside human perception and knowledge (Allmendinger, 1999). Thus, although the failure of rational planning to tame the city was diagnosed as early as the late 1960s, the dilemma is still with us to date. This is evident in the persistence of the urban problem and the birth of quasi-independent disciplines like urban regeneration, the central theme of this study.

### 3.3.5 The concept and process of urban regeneration

The last two decades of the twentieth century saw a burgeoning stream of research and literature emanating from a variety of perspectives and disciplines, all concerned with one or more aspects of the urban system (Lawless, 1996). Despite the presence of such a wide array of fragmented information, little written material is available that combines coverage of the entire fundamental (physical, economic, social and environmental) dimensions of urban regeneration with the implementation, management and evaluation of the processes. Perhaps the most comprehensive attempt in that regard is that provided by the British Urban Regeneration Association (BURA) in a reader edited by Roberts et al (2000). Six interlinked themes are identified as constituting the practice of urban regeneration as follows:

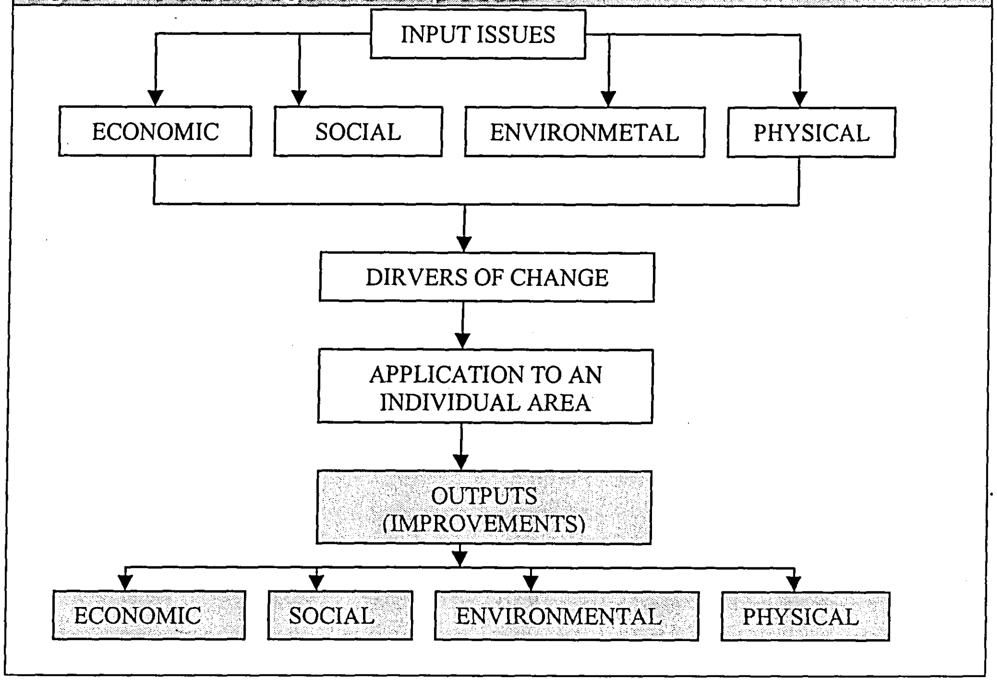
- Physical conditions and the social-political response
- Matters of housing and health
- Social welfare and economic progress
- Urban containment
- Changing role and nature of urban policy
- Sustainable development

The first five themes reflect the physical, economic, social and environmental dimensions of urban regeneration. The sixth is indicative of the need to link the first five themes with the implementation, management and evaluation of urban regeneration processes. Using the above six themes, Roberts et al (2000:17) defined urban regeneration as:

> "Comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change".

There are a few discernible features from this definition that are worth noting especially as they relate to the broader perspective of planning as a decision-making process. The first relates to what urban regeneration is - that it is an interventionist activity. This intervention can either be state-led or it can be a matter of public-private consensus. The second relates to what urban regeneration is not - that it is not simply the aspirations and achievements of urban renewal, which is essentially physical change (ibid). Urban regeneration is not urban development or redevelopment as this is less well defined in purpose. Furthermore, urban regeneration is not urban revitalisation (or rehabilitation) as this fails to specify a precise method of approach. Figure 3.7 below summarises the definition of urban regeneration according to BURA.

Fig. 3.7 The urban regeneration process




After Roberts, et al, 2000 [BURA]

The social, economic, physical and environmental dimensions of the urban existence are the inputs in urban regeneration processes. These are not static but are subject to change under the influence of many drivers of change, including local, national, and international economic conditions. The results of the analysis from these drivers of change are then applied to particular neighbourhoods that have undergone certain levels of urban decay. The outcomes are used as a feedback to inform decision-making and future courses of action. Ideally, the process is simply a variant of the rational comprehensive planning models identified earlier in the chapter. The problem yet again is that because the various dimensions of regeneration are inter-linked, a comprehensive urban regeneration process is unlikely to achieve the desired sustainable outcomes unless it adopts a special kind of holistic approach. What is required is substantial amount of departure from the conventional reductionist explanations of the process of urban change identified above. These traditional approaches begin their analyses by considering a single factor (e.g. economic dimension) and seek to widen their horizon by reference to the outcomes of urban change rather than the underlying causes. The result of such type of reductionism is partial insight into what are actually complex urban processes. There has been a general trend towards the appreciation of this notion since the 1990s although not in a manner that is consistent with the ethos of complexity thinking. The planning system itself appears to have been undergoing an evolutionary process from a highly authoritative regime to a more flexible and community aware planning. It is in this line of argument that Hall (1992) makes reference to three stages in planning theory: an initial stage lasting until about the 1960s when plans where literally blueprints; followed by the emergence of systems theory, and the current thinking which emphasises continuous participation of multiple agents. However, in broad terms, the planning system through its authoritarian centralism appears to have been out of tune with the social and cultural dynamics, hence the endurance of the planning dilemma.

## 3.4 Locating the planner's dilemma

The practice and theory of planning helped to define the vision of the progressive force of modernism through its endeavours to engineer the system and systematically impose an abstract space on the complex social and industrial order. It attempted to apply the simple, regulated and methodical (scientific) principles of coherent stability to the spatial form and temporal rhythms of the massive, chaotic urban system (Graham and Marvin, 2001). Thus, unlike the mostly utopian urban theorists identified above, the rational planner was poised to technically conduct his planning activities in a manner that conforms to scientifically defined courses of action. A stratified framework of action was conceived as in figure 3.61 above. The disillusionment about this planning process came in the late 1960s and early 1970s. It was increasingly becoming apparent that rational comprehensive planning is actually an irrational assumption, that planning is a political, incremental and essentially non-scientific and non-technical process. It became evident that planners cannot rationally tame the city. They were in a dilemma, which can best be described in the words of David Harvey (1973), quoted in Portugali's (2000) "Self Organisation and the City" (p: 32):

> "How can we account for the coexistence of spectacular scientific instruments to control the environment and their failure in the efforts to tame the city...How can we account for the fact that beautiful scientific instruments such as the gravity, interaction, or entropy maximisation models can hardly scratch the complexity of the urban scenario; and that so are the rent bid curves of Alonso's (1964) urban land use theory ... and the location triangle of Weber's (1929) industrial location theory, and the hexagonal geometrical landscapes of Christaller's (1966) and Losch's (1954) central place theory. All this...seemed incapable of saying anything of depth ...about the real problem of society and...when we do say something, it appears trite and ludicrous".

The realisation at the dawn of general systems theory that planning is essentially a non-scientific and non-technical process paved way for a more eclectic system than its technocratically authoritative predecessor advanced by modernism. It was increasingly becoming recognised that despite their good intentions, planners cannot escape the hands of the politicians, the ruling classes, and the multinationals that control the system (Portugali, 2000). Systems theory alone was, therefore, recognised to be just as remote from reality and social relevance as modernism and its positivist assumptions. Only the postmodern view can perhaps salvage us from the crisis of perception that has characterised the planning system since its inception.

The postmodern condition perceives planning as continuous participation in conflict (Byrne, 1998). The emergence of this postmodernist cultural spirit coincided with the increased impetus towards privatisation and the crisis of the welfare state. The common element of these three phenomena is that they all point towards elimination or at least minimisation of authoritarian centralism. It is perfectly true that only when a democratic culture has been able to achieve hegemony, has the planning system served the interests of communities and the working class (ibid). This is most evident in the design philosophy for Britain's social housing as demonstrated in chapters four and six. There is no need for the complex accretion of rules and regulations that have characterised the planning system for more than half a century and allowed planners to hide behind the mask of technical expertise (Allmendinger, 1999). This is not a straight case for advocating for a free market system, because even capitalism needs some form of central intervention to function as the executive committee of the whole bourgeoisie so as to fill up the gap left by the profit motive (Byrne, 1998). It must, therefore, be acknowledged that privatisation is not synonymous with a drive towards the elimination of planning. The way forward rather is to engage in a search for an appropriate balance between the planned and the unplanned. In complexity theory, such a balance is the domain for maximal innovation as explained by the edge of chaos hypothesis. The complexity revolution and the postmodernist approach have arisen out of the general milieu of dissatisfaction with rational comprehensive planning and its subsequent systems alternatives. The discomfort with these alternative approaches has led to an important ideological awakening and rethink about the way we understand the urban system:

> "Not only that science cannot control society and its shrew environment, but that it should not attempt to do so. Let society, and its artificial products...be what they have come to be: uncontrollable, unpredictable and unplannable. Let us urbanists and planners make them more so by deconstructing all that has been constructed; let us deconstruct disciplinary boundaries inside science and between it and art" (Portugali, 2000: 228)

This is a new vision that complexity theory stands for and would like to translate into a better understanding of the urban system. Its particular element that is of immediate relevance is contained in the attribute of self-organisation.

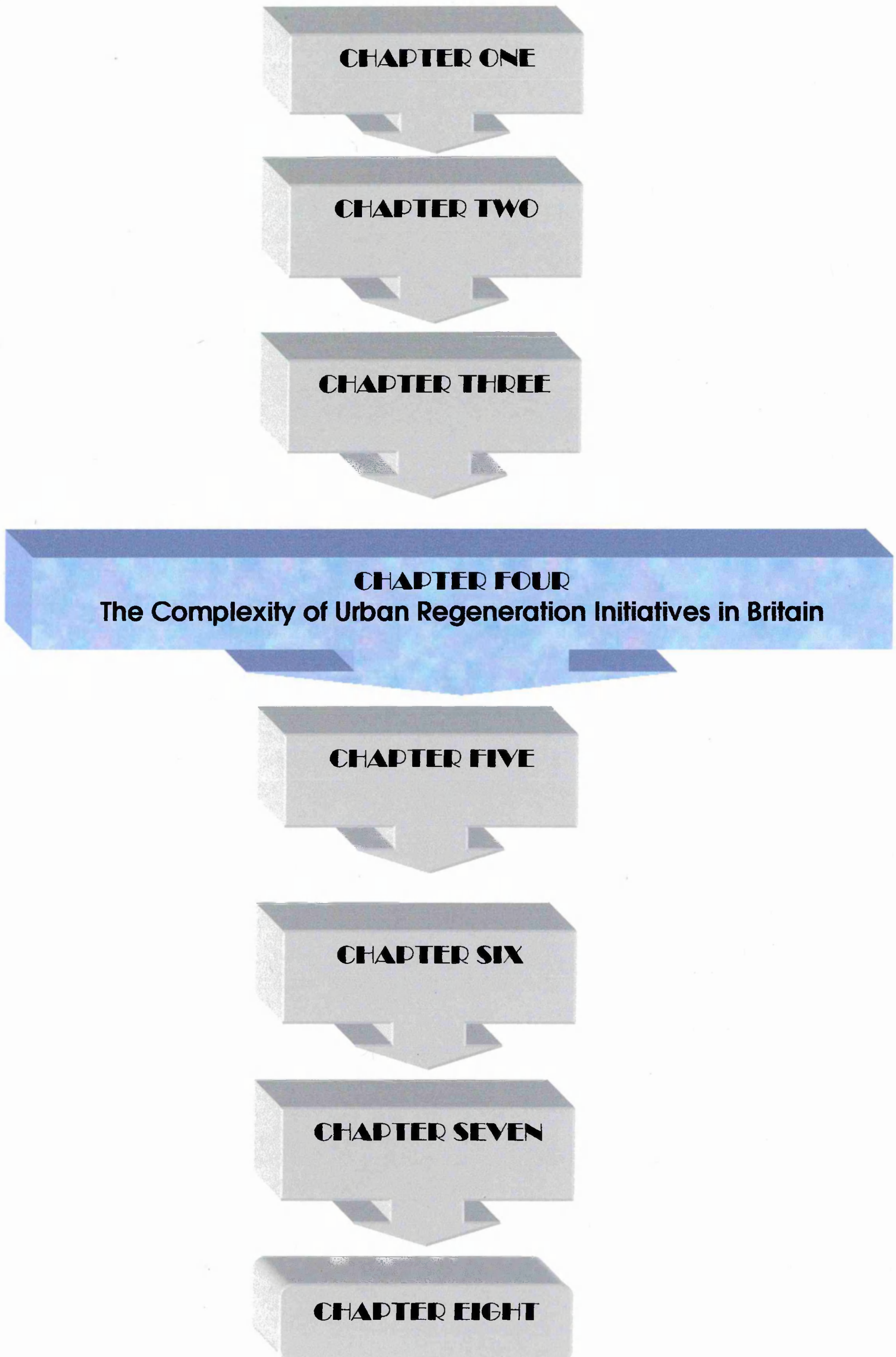
## 3.5 The potential of self-organisation

Many writers (Williams, 2000; Allen, 1997; Portugali, 2000; McCarthy, 2000) have studied and defined cities in terms of complex self-organising systems. They argue that cities involve a large number of interacting agents ranging from individuals and families to multinational organisations. Moreover, the agents and subsystems which make up cities and regions are capable of adaptation – they evolve over time. A relatively ordered structure can arise out of the richness of the interactions amomg individual agents. Portugali (2000) further suggests that its not only the city as whole that exhibits complex self-organising behaviour but that the individual decision-making agents are self-organising systems too. Consequently, decision-making in the context of cities must be seen as an ongoing interplay between self-organising systems of several scales, a notion that is upheld by complexity theory through acknowledgement of the hierarchical structures in all complex systems.

If towns and cities are self-organising systems, then this should come as good news to all urban decision-makers, including planners, who have grappled with the urban problem for a long time. Self-organisation gives us the opportunity for making decisions of a difference – designing urban regeneration programmes with complexity rather than against it. Self-organisation is a naturally occurring process if enabling conditions are availed (Moobela, 2002). It is an intrinsic characteristic of the system, arising from the interactions among the various agents with a stake in the system. The decision-maker's primary challenge in this enterprise should, therefore, be an understanding of the connectivity among agents and their evolutionary dynamics. The task goes beyond merely seeking to involve multiple agents in the decision-making processes – which is what has conventionally been considered as a shift in the approach to decision-making since the 1990s. As illustrated in chapter one, previous research has tended to dwell much on this superficial design philosophy (joined up solutions for joined up problems) leaving unanswered many pertinent questions, such as the appropriate amount of multiple agent involvement and how best to channel them. From a self-organising systems perspective, the nearest solution is that the system itself is better placed to find the right balance (the edge of chaos). Instead of providing the planner with an Archimedean point (Portugali, 2000), just provide the system with the appropriate conditions for emergence and it will spontaneously organise itself. To capture the nature and pattern of multiple agent involvement requires a detailed analysis of what has already happened in the form of a historical consideration of social connectivity. The difficulty of translating these novel ideas into the practices of planning and urban regeneration is due in no small part to modern society's concomitance with, and almost unconditional dependence upon the tenets of the reductionist paradigm.

## 3.6 Conclusion

Since the diagnosis of the urban problem during the Industrial Revolution, there have been numerous theoretical platforms designed to grasp a better understanding of the urban system. These ranged from the fantasies of urban utopists through to systems-oriented rational comprehensive planners. Broadly speaking, it all started with a dance to the tune of reductionism that has dominated physical and social scientific thinking since the time of Isaac Newton. The epistemological tools of rational comprehensive planning that emerged out of this scientific milieu are still heavily relied upon as a basis for understanding the urban system. So strong is the resilience of this scientific method that despite the evolution of the planning profession from modernism towards the new world (postmodern) view and the associated movement from expert-oriented to pluralistic planning, the (planning) system has remained relatively unchanged. Although general systems theory equally did very little to debase the ethos of modernism from planning, it at least served as the preamble to the postmodern approach through its advocacy for the need to accommodate multiple discourses and to break the "iron curtains" between various disciplines. In particular, the emergence of complexity theory has provided a fresh platform upon which to understand the urban system. In urban regeneration, the interpretation of complexity would be a fundamental departure from the ideological basis of many of Britain's past and present initiatives which are discussed in the next chapter.


CHAPTER ONE
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# CHAPTER 4: THE COMPLEXITY OF URBAN REGENERATION INITIATIVES IN BRITAIN

## 4.1 Introduction

The starting point in a comprehensive attempt to tackle the urban problem is to understand its origins and any associated corrective measures. As Campbell and Fainstein (2001) suggested, policy-makers must understand the context in which they work in order to behave intelligently. The purpose of this fourth chapter is to trace the landmarks of Britain's urban regeneration initiatives from the conception of the Urban Programme in the 1960s. This should provide a broad perspective of urban regeneration initiatives in Britain and lay a good foundation upon which to discuss the evolution of urban regeneration processes in the case study area of Hulme in chapter six. Between them, the two chapters should ideally be a subject of appendix but they both harbour important elements that are considered crucial to the aims of the study and therefore merit a more favourable place in the body of the dissertation. While chapter six is closely associated with the research findings, this chapter serves to pursue two main aims. The first is a careful enumeration of the multifarious array of urban regeneration initiatives since the 1960s with a view to investigating their natural place within the complexity project. The second is to provide the basis upon which to assess the extent (if any) to which the findings from the lone case study of Hulme in Manchester can be generlised. These two aims are pursued within a historical framework that consists of four main phases: the early urban initiatives; the transition phase of the 1977 White Paper Policy for Inner Cities and its prelude to the notion of partnerships; faith in the market processes in the 1980s; and the re-emergence of multiple-agent involvement in urban regeneration since the 1990s. For each phase, complexity tendencies are qualitatively assessed particularly the extent of central control and its implications to the delivery of urban regeneration. Although the chapter investigates complexity tendencies in the evolution of urban regeneration initiatives, the "complexity" referred to in the title above has more to do with "complicatedness" (see chapter two) rather than the theoretical meaning being used for the whole study. The chapter begins with a preamble to the emergence of urban initiatives.

## 4.2 Evolution of urban regeneration initiatives

Prior to the late 1960s, urban policy did not exist in a manner that would be recognised today (Atkinson and Moon, 1994). Urban problems were essentially viewed in physical terms. The policy aims therefore hinged on redevelopment of the city and dispersal of urban problems through the creation of new towns and fostering of regional policy. The pre-war policy tradition itself was rooted in the 'sanitary approach', which attempted to regulate overcrowding, and amenities in predominantly private sector housing market. This approach was based on the erroneous assumption that poverty stemmed from poor housing and that the conditions in which the urban poor lived were a result of poor housing and not of poverty. Efforts to encourage private property owners to improve the conditions of their properties were of limited effect. An alternative strategy of government involvement in house construction was equally of little impact and done in a piece meal manner. The aim of municipal housing construction during this period was to address the housing shortage among the working class rather than renewal. The latter only received coherent attention as late as 1930 through the Housing Act, 1930, which provided for slum clearance (ibid).

The 1945 Labour government urban policy was largely a continuation of the pre-war approach. The housing problem was recognised as dual-faceted: shortage and poor conditions. The solution to the housing condition problem was perceived to be a simple one: demolish the undesirable dwellings and replace with new units under the ownership and management of local authorities (ibid). The approach to the housing shortage problem was similar: build new council housing units on greenfield sites. This heralded the growth of council housing across many British towns and cities. However, by the mid-1960s, it was already apparent that many of the immediate post-war solutions had simply transferred the location and altered the manifestation of urban problems (Roberts, 2000). Increasing dissatisfaction with the physical approach and the resulting movement of population to peripheral estates, together with a more participatory and decentralised approach to government, gave rise to a series of adjustments to policy. This shift in priorities, together with the first tentative steps towards regeneration, was the prelude to a major expansion of urban initiatives during the 1970s. Paralleling the proliferation of these urban initiatives was a series of attempts to seek unification of approach to previously separate physical, economic and social dimensions of policy. Here, we have the first manifestation of the un-designed impetus towards holism in tackling the urban problem. The policy view shift that followed the dissatisfaction with the physical approach may be conceptualised in terms of the adaptive capacity of decision-making mechanisms, an element that appeared to have trickled down to the many of the early urban initiatives.

## 4.3 Early urban initiatives

By the late 1960s it was clear that many of Britain's inner cities were still areas of crises (Matthews, 1991). They were facing serious social, economic and environmental problems. The first real move by a post-war government to tackle such inner city problems was the introduction of the Urban Programme in 1968 (Ratclife, 1996). The Urban Programme and its associated Community Development Projects (CDPs) were in harmony with the prevailing social pathology approach and were conducted through area-based measures. A number of factors were responsible for the initiation of the UP and CDPs, including the liberal perspective on the 'race problem', electoral expediency in Labour's inner-city heartland, successful examples of policy in the US as well as civil service commitment (Atkinson and Moon, 1994).

### 4.3.1 The Urban Programme (UP)

Between 1968 and 1978, the Urban Programme was a set of arrangements in which central government partly funded projects in any local authorities that demonstrated special social need (ibid). The purpose was to supplement other legislative measures in ensuring that citizens had an equal opportunity in life. Because of this equity agenda, the Urban Programme involved positive discrimination in favour of selected groups or areas. The programme was biased towards small-scale projects emphasising experimentation, self-help, co-ordination of existing services and the promotion of quick results. Funding and administration of the programme was done by the Home Office. Successful local authorities received 75% grant towards the costs of particular projects. Although the basis for financial assistance was prescribed in the 1969 Local Government Grant (Social Needs) Act, it seems that no one had a clearly formulated view of what constituted urban deprivation. The major problems of the inner cities that required remedial action were equally ill defined (ibid). In the absence of a precise definition of the problem, administrative expedience prevailed (Higgins et al 1983). The primary criteria for project approval seem to have been race, visible effects and enthusiasm and commitment of the concerned central government department. What was at play was a pseudo free-market situation with little central control, suggesting that the central authority had little or no idea of what the problems and goals were. What renders credibility to this argument is that though race and immigration were a central issue, these received little attention until about 1973.

### 4.3.2 Community Development Projects (CDPs)

The Community Development Projects were equally influenced by civil servants, academics and success stories from the US (Atkinson and Moon, 1994). These were basically small-area projects in deprived local authorities and designed to marshal limited resources towards individuals and communities who were left out of the opportunities offered by full employment (Lawless, 1979). In each local authority, specific areas containing these disadvantaged populations were identified and an action team set up. Local authorities played an important role in the CDPs, though 75% of funding came from central government. While the central government through the Home Office, acted as the central co-ordinating body, each CDP had an action team. The action teams were located in the target areas so as to carry out the task of encouraging the people to improve their lives. The research team was located at a nearby university or polytechnic so as to monitor developments and pass on research data and lessons to the Home Office and the relevant local authority. This relationship practically proved unworkable. Twelve CDPs were set up mainly in locations suffering from deprivation. Because of the lack of a clear definition of objectives and roles, CDPs were characterised by ideological differences amongst the various interest groups. The social pathology approach was central to CDPs at the time of their inception. However, many CDP teams later rejected this perspective. They refused to accept a role and a problem definition, which blamed the victim and reduced poverty to a residual problem. The search for alternative explanations culminated in the adoption of an explicitly Marxist theory, which saw deprivation as an inevitable by-product of uneven capitalist development (Forrest et al, 1979). As a result of this perception, CDP teams started to encourage residents to oppose the activities of the capitalist state and make greater demands on their local authorities. The adoption of such an approach also further alienated the CDPs from the central government. Since funding still remained with central and local government, this provided the means through which CDPs could be curbed. Indeed, in 1976 the central government terminated the funding for the CDP information and intelligence unit. This effectively ended the CDPs and by 1978, they had all gone into extinction.

### 4.3.3 Inner Area Studies (IAS)

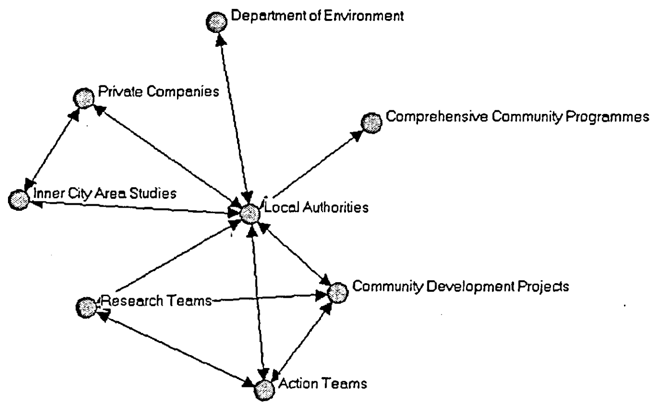
The Inner Area Studies (IAS) programmes were set up in 1972 (Atkinson and Moon, 1994). Unlike the CDPs, IASs were run by the Department of Environment rather than the Home Office. A total of six studies were established. Three of them, set up in Oldham, Rotherham and Sunderland, were concerned with local government decision-making and its impact on environmental problems. The other three were focussed on relatively small inner-city communities in Liverpool (Toxteth), Birmingham (Small Heath) and London (Lambeth). The main objective of all the six studies was to carry out research aimed at getting a better understanding of the causes of urban deprivation. The research was carried out by carefully selected teams of consultants. The IAS reports reflected growing unpopularity of the social pathology approach. However, there was a general retreat from the wider Marxist assumptions of the CDPs in favour of approaches that emphasised structural factors while at the same time retaining area-based concerns.

### 4.3.4 Comprehensive Community Programmes (CCPs)

The Comprehensive Community Programmes (CCPs) were set up by the Labour Government in 1974 (Atkinson Moon, 1994). Like the CDPs, they were led by the Home Office and represented an attempt to apply corporate management techniques to urban problems. The CCPs involved appointment of teams that would be located in local authorities. The teams would play a central role in carrying out research, identifying problems, prioritising them and then persuading authorities to redirect resources towards solving such problems. An estimated 90 CCPs were identified with two of them being formally launched in Gateshead and Motherwell. However, the establishment of the CCPs coincided with the Labour government's White Paper Policy for the Inner Cities and the former were either sidelined or absorbed into the new policy.

A summary of some of the early urban initiatives in terms of power relations is illustrated in figure 4.1.

**Fig. 4.1 Central control in early urban initiatives**



A common feature of these early urban initiatives was the high level of central control, with practically little or no room for bottom up mechanisms in the decision-making processes. This was the case despite the pronouncement of social pathology as the general theme governing the programmes. Therefore, the whole process of regeneration at this stage represented a highly frozen system that may not have been an ideal medium for innovation. The continued uneasiness with the programmes and the relentless search for new ones was testimony of their poverty in tackling the urban problem.

Although CCPs were practically not implemented, they at least managed to herald the important notion of partnerships, through the 1977 White Paper.

## 4.4 The 1977 White Paper: Policy for Inner Cities

The shift in departmental responsibility, from the Home Office to the Department of Environment, reflected a change in the emphasis of urban policy. Whereas the Home Office had adopted a social pathology approach, the Department of Environment emphasised the need for a structural or economic oriented approach to urban deprivation and policy (Balchin and Bull, 1987). This new explanation of the urban problem was finally expressed in the 1977 White Paper Policy for Inner Cities. Prior to the White Paper, there was little awareness of the impact of the urban-rural shift and in fact policy seemed to have unconsciously reinforced this trend. Furthermore, the fact that Britain's cities were in a state of economic, social and physical decline was not given serious attention. The major achievement of the White Paper was to correct these shortcomings.

### 4.4.1 Aims and objectives of the White Paper

The aims and objectives of the White Paper were enshrined in part III of the policy document (ibid). In general, they reflected an awareness of the multi-faceted nature of the urban problem, with the root causes being recognised to be of different types and operating at a variety of levels. The general aims of the policy embraced four main themes:

- Economic development;
- improvement of the physical environment;
- social improvement; and
- creation of a new balance between population and jobs.

With regard to the need for economic development, it was thought that this required two forms of action: retention of existing jobs and the encouragement of indigenous industrial growth, particularly through cultivation of small businesses, job training and improvement of transport infrastructure. The need to seek improvement of the physical conditions entailed improving the housing stock, better use of vacant land and improvement of the aesthetic value of the local environment. Improvement of the social infrastructure was not clearly defined though it would appear that it had to do with the immediate improvement of living conditions in inner city areas. The new balance between jobs and population needed to extend beyond particular cities so as to capture the wider regional contexts. It was recognised that this balance depended upon the other aspects, particularly the physical and economic aims.

### 4.4.2 Agencies of regeneration

The agencies through which the above proposals would be translated into practice were prescribed in part IV of the White Paper. Local authorities were identified as the primary agency to carry out these tasks. According to the central government, local authorities were seen as the natural agencies to tackle inner city problems (HMSO, 1977). This, it was argued, was because of local authorities' closeness to the problems, experience of the relevant areas, local accountability and existing role as providers of many of the key services which play a vital part in regeneration processes. However, the faith in local authority supremacy was slowly fading out under the influence of the New Right critique of the state. Local authorities were expected to be innovative in attracting industry and commerce to areas of deprivation (ibid). What was being proposed was the idea of partnerships introduced earlier by CCPs. Local authorities were, therefore, expected to work in partnership with other government agencies at both central and local level in order to secure a co-ordinated and comprehensive approach to problems. Where possible, voluntary organisations would be integrated into partnership arrangements so as to involve local communities in the regeneration processes. Finally, the emerging New Right critique advocated for private sector involvement in the regeneration processes. It was argued that the resources of small and medium size firms were essential if real progress was to be achieved (ibid). The public sector's role was reduced to that of providing the conditions (infrastructure, a sympathetic planning regime, etc.) through which the private sector would flourish. In order to ensure proper co-ordination among the various agents, the White Paper indicated that the government intended to enter into partnerships with the selected local authorities and other agencies.

### 4.4.3 The introduction of Partnerships

The Inner Urban Areas Act 1978 created Partnerships, Programme Authorities and Designated Areas through which Urban Programme funds would be channelled (Atkinson and Moon, 1994). The order of preference for funding was Partnerships first, Programme Authorities second, and lastly Designated Areas. The Act created 7 Partnerships, 15 Programme Authorities and 19 Designated Areas as shown in table 4.1

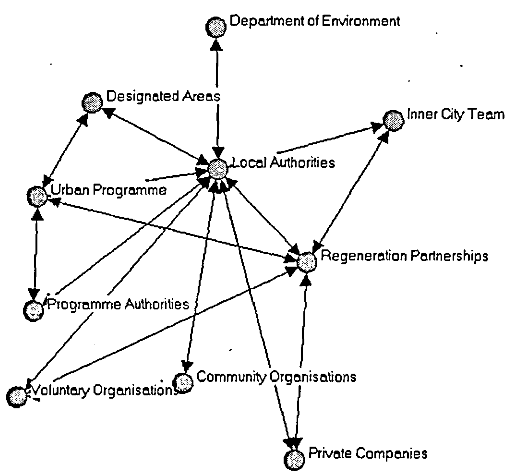
**Table 4.1 Partnerships, Programme Areas and Designated Areas**

| | |
|---|---|
| **Partnerships** | Birmingham; Liverpool; Manchester and Salford; Newcastle and Gateshead; Lambeth; Hackney and Islington; London Docklands |
| **Programme Areas** | Bolton; Bradford; Hammersmith; Hull; Leeds; Leicester; Middlesbrough; North Tyneside; Nottingham; Oldham; Sheffield; South Tyneside; Sunderland; Wirral; Wolverhampton |
| **Designated Areas** | Barnsley; Blackburn; Brent; Doncaster; Ealing; Harringey; Hartlepool; Rochdale; Rotherham; St. Helens; Sandwell; Sefton; Wandsworth; Wigan; Blaenau Gwent; Cardiff; Newport; Rhondda; Swansea |

Source: Atkinson and Moon, 1994

In terms of structure, each partnership had a 3-tier system (Lawless, 1986). The top tier comprised of the Partnership Committee chaired by the central government Minister. The committee also contained representatives from the relevant central government departments (including local government, health service and police), which had a stake in the regeneration of inner areas. The role of the top tier was to act as a co-ordinating body to ensure that the various agents worked towards the same goals. The second tier was the Officers Steering Group chaired by a Regional Director of the Department of Environment. The group also contained senior officers from other government departments, local authorities and other stakeholders such as the police and the local health authority. The primary responsibility of this tier was to develop a programme of action and to ensure implementation. At the very lower tier was the Inner City Team, made up of relevant officers from local government, central government and the voluntary sector. The Inner City Team was in essence responsible for the day-to-day work of the partnerships. It was at this tier that plans drawn up at higher levels were translated into reality. The policy aims generally reflected the White Paper Policy for Inner Cities. Fingure 4.2 summarises the relations among some of the regeneration initiatives of the late 1970s.

**Fig. 4.2 White Paper Policy implementation and central control**



Appreciation of multiple agent involvement in the regeneration processes began to manifest itself in the decision-making mechanisms towards the late 1970s.. However, practically speaking, the idea of partnerships still clearly demonstrated continuing faith in the top-down approach to decision-making. Despite the inclusion of local community groups at the third tier, the very fact that policy aims of the partnerships were dictated by the White Paper means that programmes were imposed from the top. This gave rise to a number of problems, hinging heavily on conflicts among the various stakeholders. As Lawless (1980) pointed out, effective co-ordination was limited and in fact some stakeholders viewed the partnership arrangements as a threat to autonomous policy-making. The problems inherent in partnerships were further exacerbated by the looming elections of 1978. This meant that programmes had to be implemented in a hurried manner as political expedience overtook the natural pace of implementation. The end result was that there was lack of co-ordination in the first year of the programmes and the hoped for regeneration was not achieved. Just in their second year of existence, partnerships found themselves in the aggressive hands of a free market-oriented Conservative government.

## 4.5 The rise of private sector initiatives in the 1980s

The Post-1979 Conservative government under the premiership of Margaret Thatcher introduced several new policy initiatives where the central theme was a fresh ideological zeal towards private-sector involvement in the regeneration processes. The government believed that problems of British cities derived from the flight of the private sector and that the answer lay in the encouragement of these private sector efforts in the regeneration processes (Ratcliffe, 1996). Following this ideological change, the Urban Programme, with its social concerns, came under immediate threat. The comprehensive review of the programme emphasised the need to focus spending on economic and environmental projects rather than on social issues. This was in line with the government emphasis on economic regeneration and took place within the context of a declining financial base as funds were increasingly diverted from the Urban Programme to market-oriented initiatives. During the eleven years of the Thatcher government, several new urban policy initiatives were introduced. The initiatives can broadly be classified into two categories: property-led initiatives and finally based approaches.

### 4.5.1 Property-led regeneration

There were three principal policy areas based on the Conservative government's philosophy of private sector involvement in the regeneration process. These were Urban Development Corporations (UDCs) Enterprise Zones (EZs) and Simplified Planning Zones (SPZs). The three policy areas constituted the key elements of the 1980s urban policies and challenged the conventional notion of the post-war years that local authorities were the only suitable bodies through which urban regeneration processes could be controlled (Ratcliffe, 1996). A further initiative based on a similar notion was that of Free Ports established in the middle of the 1980s (Atkinson and Moon, 1994).

**Urban Development Corporations (UDCs)**

An Urban Development Corporation (UDCs) is an organisation given the task of regenerating a designated urban development area (ibid). UDCs were created by the local Government, Planning and Land Act 1980 and derived their powers from this legislation. The number of declared UDCs increased from two in 1981 to thirteen by the end of 1992. The declaration of UDCs entailed taking the areas out of the control of local authorities and putting them in the hands of a quasi-government body called the UDC. The declaration was a prerogative of the Secretary of State upon being of the opinion that national interest was at stake. The aim of the UDCs was to secure the regeneration of its areas by bringing land and buildings into effective use, encouraging the development of existing and new industry and commerce, creating an attractive environment and ensuring that housing and social facilities were available to encourage people to live and work in the area (LGPLA, 1980). UDCs had a diversity of powers, including compulsory purchase to facilitate land assembly and site preparation. They were also effectively the planning and highway authorities although their jurisdiction did not extend to housing.

**Enterprise Zones (EZs)**

Like Urban Development Corporations, Enterprise Zones derived their legislative creation from the Local Government Planning and Land Act 1980. Enterprise Zones owe their origins to the work of Peter Hall (Hall, 1977) who advocated for a radical free market strategy based on lessons from the Far East. He argued that rejuvenation of Britain's inner cities could be achieved through legislative relaxation in areas such as planning, employment, pollution, health and safety. This would provide conditions necessary for the development of entrepreneurial talents, enterprise and innovation thereby encouraging small businesses to flourish. The growth of small firms would not only regenerate the concerned inner city areas but also help to secure the overall regeneration of Britain's economy through the multiplier effect. However, the EZs that were created did not wholly reflect Peter Hall's ideas (Atkinson and Moon, 1994). Apart from being time-limited to ten years, the EZ package included:

- Exemption from development land tax;
- exemption from rates on industrial and commercial property;
- 100% allowances for corporation and income tax purposes for capital expenditure on industrial and commercial buildings;
- prioritisation of firms in EZs in matters of customs facilities;
- exemption from industrial training levies and from the requirements to supply information to Industrial Training Boards;
- simplified planning regime;
- increasing the speed of administration to those controls that remained in force; and
- reduced government requests for statistical information.

Most of the initial Enterprise Zones were located in or near long standing run down urban areas or in those areas that had suffered decline of traditional industry leaving behind them high unemployment levels. Many of the advantages associated with EZs involved reduced local government intervention, especially with regard to relaxation of the planning regime. This was a great achievement, at least in the context of Conservative ideology.

However, the disadvantages seemed to have outweighed the advantages. The most attractive incentive offered by EZs for incoming firms were rates relief (ibid). This subjected local firms to unfair competition from incoming firms. Moreover, the real beneficiaries of the incentives appeared to have been landowners who received profit rents as a result of developments within the zones. A further disadvantage of EZs was that identified by Talbot (1988) who suggested, in the study of Tyneside Enterprise Zone, that the zone may actually have shattered some firms from the need to be innovative as their profit margins were cushioned. Finally the cost to the exchequer of maintaining EZs was greater than the benefits. The National Audit Office noted that by the end of March 1987, Enterprise Zones had cost the Exchequer £431 million (NAO, 1990). The number of jobs created was only 13,000 while the cost per job to the Exchequer was approximately £30,000. These high costs led the Department of Environment in 1987 to put a hold on the creation of new EZs apart from exceptional cases.

**Simplified Planning Zones (SPZs)**

Simplified Planning Zones were established on similar lines as Enterprise Zones. They were introduced by the Housing and Planning Act, 1986 though designation only started in November 1987 (Ratcliffe, 1996). Unlike EZs where town planning principles were applied in isolation from all other financial benefits, the SPZs represented a pure form of deregulation. The SPZ initiative reduced or avoided altogether the need for developers to apply for planning permission for proposals that accorded with the schedule of acceptable development. Like EZs, designation of SPZs was on the basis of a ten-year period.

**Free Ports (FPs)**

The Free Ports concept represented an experimental attempt to operationalise the Customs and Excise ideas underlying the EZs and UDCs without exempting big areas from the UK laws and regulation (Atkinson and Moon, 1994). They were used by the government as part of an attempt to help areas of high unemployment (Davies and Butler, 1986). Free Ports were defined by the body responsible for them, Her Majesty's Customs and Excise (HMCE) as "*enclosed* *areas into which goods were moved without payment of customs duty and similar import charges, including VAT charged at importation*". Duty and the VAT charged on imports were only payable if the goods were consumed within the free zones. Processing of goods other-than for export outside the European Community attracted duty but not VAT. Six Free Ports were set up in 1984 in the areas of Southampton, Cardiff, Liverpool, Prestwich, Birmingham and Belfast, with the first three being located in port areas while the rest were in or near airports. Lessons from elsewhere in the world suggest that Free Ports stand the highest chance of being successful in areas that are already prosperous and in places that are already popular stopping points on the trade routes of the world (Davies and Butler, 1986). However, all the UK Free Ports, apart from Southampton, were located in declining areas and none of them were particularly accessible to European trading routes.

### 4.5.2 Financially based regeneration initiatives

Despite the highly emphasised desire to pursue policies based on deregulation, the post-1979 Conservative government also introduced a number of financially based urban initiatives. This was in recognition of the fact that the deregulated regime might not address all the problems of the urban system. The Conservative government inherited the Derelict Land Grant (DLG), a measure designed to defray the costs of bringing derelict land on the market (Atkinson and Moon, 1994). On the basis of this initiative, the government developed two further grants: the Urban Regeneration Grant (URG) and the Urban Development Grant (URG).

**Derelict Land Grants (DLG)**

Derelict Land Grants had their origins in the Aberfan disaster of 1966 which prompted the Local government Act, 1966 to make funds available to local authorities for the purpose of reclaiming land in rural areas. The Conservative government reoriented the grant to benefit urban areas. Under the local government planning and Land Act, the grant was opened up to the private sector to assist industrial, commercial and housing developments. The aim of the grant was to reduce the cost gap between redeveloping previously used land and developing green-field sites so as to promote urban renewal (DOE, 1988).

**Urban Development Grant (UDG)**

The Urban Development Grant was a by product of the Financial Institutions Group (FIG) set up by the Department of Environment following the Merseyside riots of 1981. The grant was introduced in 1982 alongside the establishment of the Inner City Enterprise. The latter was a property development company, funded in part by the Urban Programme that was to seek out development opportunities that would otherwise be ignored (Roberts, 2000). The UDG's aim was to assist commercial, industrial and housing developments that would not proceed without public subsidy. Although Urban Development Grants helped to boost the land market, it would appear that the primary beneficiaries were land owners, while their impact on the job market was less clear.

**Urban Regeneration Grants (URGs)**

Urban Regeneration Grants (URGs) were created on similar lines as the Derelict Land Grants in that they aimed to subsidise the costs of reclamation, refurbishment and new building projects (Wray, 1987). The main departure from the DLG was that the URG had a private-sector orientation with almost no formal local authority involvement in the process. The grant was characterised by confusion and long bureaucracy with the first grant taking more than ten months to approve (Wray, 1987). The URG lasted for little more than a year after which it was merged with the Urban Development Grant to form City Grant.

**City Grants**

As noted above, City Grants were created as a result of merging Urban Development Grants and Urban Regeneration Grants. The grant represented just about the only new initiative contained in Action for Cities - the major urban statement of the 1980s (Atkinson and Moon, 1994). Under this initiative, private companies would apply directly to the Department of Environment for assistance, without going through local authorities. The aim of the grant was to provide support to private sector capital projects which benefited run down inner cities and which could not proceed without assistance (DOE, 1988)

**City Action Teams and Task Forces**

City Action Teams and Task Forces both shared a common objective of seeking to co-ordinate the work of their respective departments within the activities of local authorities, voluntary organisations, private sector groups and community groups (Ratcliffe, 1996). Though funding to each organisation was limited, the initiatives were born of a desire to co-ordinate the work of national government departments at a local level.

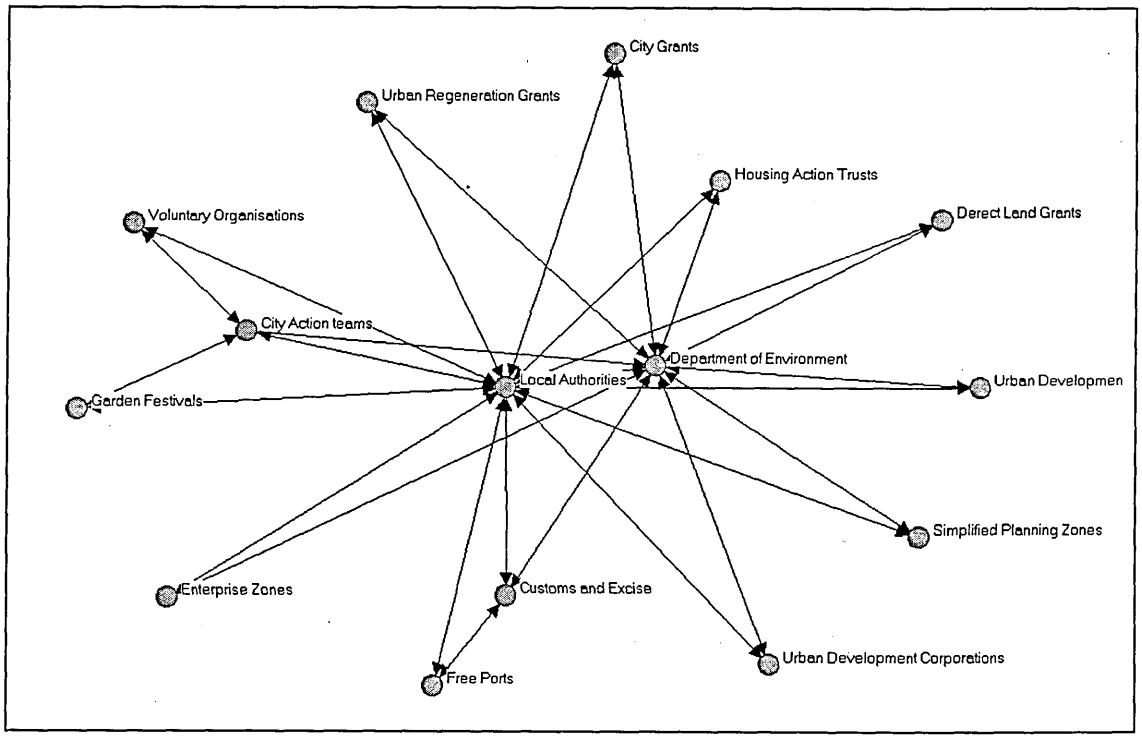
**Garden Festivals**

Garden Festivals were a means of publicising land where urban regeneration schemes were in operation (Atkinson and Moon, 1994). Their aim was to demonstrate to the private sector that land was available and had been brought into a usable state. Some Garden Festivals were successful in attracting housing and landscaping developments. However, most of them were largely ineffective as flagship demonstrations of comprehensive urban regeneration. In practice, the general health of the economy determined the pace of take-up of reclaimed land.

**Housing Action Trusts (HATS) and Estates Actions**

Housing Action Trusts and Estates Actions were a product of the desire to help low-income inner-city owner-occupiers whose properties were deteriorating at alarming rate. It was argued that this required state intervention. Consequently Housing Action Trusts were launched by the Housing Act, 1988. HATs were aimed at estates with severe problems while Estates Actions attempted to deal with those suffering from less severe problems. The HATs initiative was created to enable areas of local authority housing to be prepared for sale to private or quasi-private (Housing Associations) landlords. Implementation of these initiatives was hampered by the incidence of opposition from councils and tenants to an extent that very few HATs were actually set up. As a result of that central government found itself in a dilemma on the issue of transferring estates out of council tenure after improvements. It was argued that HATs would depend upon local authorities' ability to involve tenants and private companies in the initiative (Atkinson and Moon, 1994). Figure 4.3 below suggests the general level of linkage among the 1980s regeneration initiatives.

**Fig 4.3 Power relations in urban regeneration initiatives of the 1980s**




From the diagram, it can be seen that central control was still a central feature of urban regeneration initiatives in the 1980s. A striking feature of the 1980s formal networks of regeneration is the withdrawal of centrality from local authorities to central government as the various regeneration initiatives were directly answerable to the latter. Thus, despite the apparent independence of many of the initiatives, it should be noted that they were public sector bodies with considerable amount of state involvement, especially with regard to funding. Connectivity within the system was also limited to the power relations established and envisaged by the central government, with practically no linkages between the various initiatives themselves, thus rendering the whole system of governance an artificial arrangement. Local authorities (LG) were also largely by-passed in the implementation and planning of the new initiatives as many of them (the initiatives) derived their powers from the central government and were therefore quasi-independent local authorities in their own right. There does not seem to have been any evidence of involvement of local communities in the running of these initiatives either. The enabling environment created by the central government was aimed at fostering private sector enterprise in the hope that, through the multiplier effect, the benefits would trickle down to the local communities as well. The lessons of the free market failure and the procrastinations leading to the first interventionist measures in planning were clearly ignored here.

It would not be a quantum leap to argue that this new set of market-driven ideologies substantially violated the evolutionary pattern of multiple-agent involvement in the regeneration processes that was beginning to sprout towards the late 1970s. The resilience of this emergent pattern of governance was so strong that it can probably be linked to the outbreaks of rioting in Britain's inner cities in 1980 and 1981. The survival of the Urban Programme around this time has also been attributed to this natural force against private enterprise in the delivery of urban regeneration processes (Benyon and Solomos, 1988). However, the public unrest only served to delay the review of the Urban Programme, which eventually took place in 1985, thereby giving credibility to the part of complexity (Gell-mann, 1993) that makes room for the influence of certain individuals (in this case Thatcherism) in contributing towards the maladaptive schemata[1] for certain complex systems. Whilst appreciating the presence of such maladaptive schemata, the argument here and in the rest of the dissertation is that such effects only amount to a temporal typology for the system. In short, they can only delay (or suppress) the emergent behaviour, which would soon re-emerge with renewed impetus to steer the whole system to the natural course. The dawn of the 1990s is perhaps testimony enough to the inexorability of the natural social processes in Britain's urban regeneration efforts.

## 4.6 Urban regeneration initiatives between 1990 and 2003

The 1990s saw a two-phase change of government. The first was the transfer of Conservative leadership and consequently premiership from Margaret Thatcher to John Major. The second came in the wake of the 1997 elections, which ushered in the New Labour government. Despite changes, it is clear that urban regeneration processes in the 1990s had tended towards community-based initiatives. Paul Lawless neatly summed up this community orientation of urban initiatives.

> "If the mantras of regeneration policy in the 1980s were enterprise and business, the themes which have dominated the succeeding decade have surely been partnership and above all, community" (Lawless, 1999:135).

It is hard to think of any government-sponsored guidance in the area of regeneration that does not embrace the idea of community involvement. On the basis of this notion, a plethora of urban regeneration initiatives were set up between 1990 and 2003. Perhaps the most prominent were the City Challenge programmes that swept across many inner cities of Britain suffering from multiple deprivation.

### 4.6.1 City Challenge programmes

The City Challenge programmes were launched in May 1991. Their aim was to transform specific run down inner city areas and to significantly improve the quality of life of local residents (DETR, 1998). They invited Urban Programme local authorities, in partnership with private, public and voluntary sector organisations to develop comprehensive strategies for the sustainable regeneration of key areas of deprivation and to compete for resources to implement the strategies. The strategies were based upon the definition of a clear vision for the area. By this stage, City Challenge represented the largest single element of urban policy budget (Mawson, et al, 1995). Two competitions were held, with a total of 31 bids having been successful. Eleven pacemaker partnerships commenced on 1 April 1993. All, but one, finished on 31 March 1998. North Tyneside was the only one that continued for a sixth year. Each successful partnership received £37.5 million over a five-year period depending on satisfactory progress based on agreed targets. The third round of City

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[1] This is the part of complexity associated with Murray Gell-mann (1994) who argues, among other things, that the intervention from certain key individuals in society can contribute towards the inability of a system to adapt and / or stay at the edge of chaos.

Challenge was suspended and eventually abandoned pending a major review of urban policy (Roberts, 2000).

### 4.6.2 Single Regeneration Budget (SRB)

The outcome of the policy review, alluded to above, was the emergence in November 1993 of the Single Regeneration Budget (SRB). The rationale was that the central government decided to amalgamate all the regeneration initiatives at the time into a single regeneration budget. Under this initiative, urban regeneration projects would receive funding from SRB and the European Community (EC). The SRB funding was designated to tackle social and economic issues, as well as environmental degradation within the inner cities (Ratcliffe, 1996). The government offices for the regions were given the role of administering the existing main programmes and the new SRB. It would appear that funds were continually being diverted from the initiatives of the 1980s into community-based ones of the 1990s. For example, in late 1992, the government announced budget cuts for both the Urban Programme and the Urban Development Corporations. In December 1994, the successful 201 SRB bids were announced, with the projects commencing during the 1995/96 financial year (Roberts, 2000).

### 4.6.3 English Partnerships

Another element of urban policy introduced during the 1990s was the creation of English Partnerships. A consultation paper published in July 1992 proposed the establishment of Urban Regeneration Agencies - the English partnerships (Roberts, 2000). The aim of English partnerships was to promote the reclamation and development of derelict, vacant and underused land and buildings in England, with particular emphasis on urban areas. The agencies came into effect in April 1994 and combined together the functions previously discharged by English Estates, City Grant and Derelict Land Grant. In Scotland and Wales, local participation in urban regeneration was co-ordinated by a one body: Scottish Development Agency (SDA) and the Welsh Development Office (WDO) respectively (Ratcliffe, 1996).

### 4.6.4 Private Finance Initiative (PFI)

The Private Finance Initiative (PFI) is one of the mechanisms through which the public sector can improve value for money in partnership with the private sector (Crocker, 2000). It was launched in 1992 with the aim of reducing the public sector borrowing requirement and to raise additional capital finance in the attempt to persuade the private sector to take a more active role in urban regeneration (Roberts, 2000). The objectives of PFI can be summarised as follows (Crocker, 2000):

- Promoting private investment in the capital assets required to deliver public services efficiently by pooling private sector finance and operational management on a risk taking basis;
- improving value for money by allocating risks to those best able to manage them in the public or private sectors;
- encouraging the upgrading and rationalisation of local authority property, including that which is needed for service delivery and office accommodation;
- allowing the transfer to the private sector of trading assets, which would benefit from better utilisation, and of surplus operational land and buildings;
- facilitating joint venture to give authorities new scope to participate in companies led by the private sector; and
- removing unnecessary obstacles to partnerships in the areas of economic development and regeneration.

With the election of the labour government in May 1997, new policy instruments were introduced, though certain elements rolled forward (Roberts, 2000).

### 4.6.5 New Labour and urban regeneration

One of the early initiatives of New Labour was the creation of Regional Development Agencies (RDAs). This followed the consultation paper issued by the Department of Environment Transport and the Regions (DETR) in June 1997. The paper indicated the intention to create organisations that would co-ordinate regional economic development, help attract inward investment and support small businesses. However, the scope of urban regeneration under the New Labour government was essentially defined by two key documents and the subsequent policy instruments and statements that they marshalled. The two policy statements are the report of the Urban Task Force, chaired by Lord Rodgers of Riverside, entitled "Towards an Urban Renaissance", and the report of the Social Exclusion Unit, entitled "Bringing Britain together: A National Strategy for Neighbourhood Renewal" (Cameron, 2001).

The remit of the Urban Task Force was to make cities better and more attractive places, focussing on the city as a whole, hence the claim of holism in this policy document. The full remit is enshrined in the Task Force's mission statement:

> "The Urban Task Force will identify causes of urban decline in England and recommend practical solutions to bring people back into our cities, towns and neighbourhoods. It will also establish a new vision for urban regeneration founded on the principles of design excellence, social well-being and environmental responsibility within a viable economic and legislative framework". (Rogers, 1999)

The key concept of Lord Rogers' report is its faith in the idea of design-led regeneration. The report argues that the promotion of sustainable lifestyles and social inclusion in towns and cities depends on the design of the physical environment. A crucial issue from this architecture-minded statement is the question of how those designs are conceived – do they reflect the aspirations of the multiple agents of the urban system (including local communities) or are they conceived in a vacuum by "professionals". If it is the latter, then the lessons of Hulme (chapter 6) and those referred to by the Social Exclusion Unit in its report, should provide enough caution against relying on physical design in fostering urban regeneration. The focus of the Social Exclusion Unit's report was on neighbourhoods and therefore on the problems of people in the most deprived neighbourhoods. This is enshrined in its remit, which was to:

> "Develop integrated and sustainable approaches to the problems of the worst housing estates, including crime, drugs, unemployment, community breakdown, and bad schools, etc" (Social Exclusion Unit 1998).

The report started by taking stock of past urban regeneration programmes and initiatives with a view to gaining lessons from them. The emphasis on the part of past regeneration programmes on "brick-and-mortar" was appropriately criticised. In the foreword by the Prime Minister, it was noted that huge sums of money have previously been spent on repairing buildings and giving estates a new coat of paint, but without matching investment in skills, education and opportunities for the people who live in these communities. Another area of criticism of past regeneration schemes was that resources were pumped into area-based initiatives without sufficient participation from local communities and without sufficient linkages among the different projects (Cameron, 2001). This was noticeable especially in the operations of the market-led regeneration schemes of the 1980s, where individual projects virtually operated in isolation from others in pursuit of their private profit motives. A prominent feature of urban regeneration policies under the post-1997 Labour government is the issue of involving local communities in the decision-making processes. This had its first explicit expression in the Best Value concept.

### 4.6.6 Resident Consultations and the concept of Best Value

The concept of Best Value was introduced by the central government as a mechanism for improving the quality, efficiency, and effectiveness of local authority services. To achieve these aims, the government has identified consultation with local residents as one of the four C's that constitute the Best Value framework. The other three C's include: challenge – to local authorities to address key questions about the justification for a service and the way in which it is provided; comparing – their performance with the best, using national performance indicators and many other means which have been developed locally, such as local deprivation indices; and building a competitive economy with a flexible labour market, underpinned by the fair treatment of those affected. The need for local authorities to consult with local residents began on a voluntary basis following the government White Paper "Modern Local

Government – In Touch with the People", dated 30 July 1998. Later, the Local Government Act 1999 introduced Best Value Reviews, including consultation with local taxpayers and service users, as one of the key ways of improving the quality and effectiveness of council services. Since then, the culture of consultation with local communities has become an important aspect in local authority decision-making processes, to the extent that it is hard to come across a local authority website that does not contain a resident consultation strategy.

The concerns reflected in both the reports of the Urban Task Force and that of the social exclusion Unit have found their expression in many regeneration initiatives, including the New Deal for Communities programme.

### 4.6.7 New Deal for Communities

The New Deal for communities programme was launched on 15th September, 1998 (DETR, 2000). It is a key programme in the government's strategy to tackle multiple deprivation in the most deprived neighbourhoods in the country. The programme is currently (at the time of writing) supported by the Office of the Deputy Prime Minister's (ODPM) Neighbourhood Renewal Unit and administered on a regional basis by Government Offices. The programme is delivered through partnerships formed between local people, community and voluntary organisations, public agencies, local authorities and business. The aim of the partnerships can be summarised as that of providing "joined-up solutions to joined-up problems" (DETR, 2001). Though the problems of each area are unique, the objectives of the partnerships reflect five key issues:

- Workless-ness and poor prospects;
- improving health;
- tackling crime;
- raising educational achievement; and
- housing and the physical environment

The seventeen pathfinder partnerships developing New Deal for Communities were among the most deprived areas of England. All, but three were in major cities (Urban Task Force, 1999). A total amount of £774 million was allocated to support these pioneer partnerships (shown in table 4.2) over a ten-year period (DETR, 2001).

**Table 4.2 Pathfinder partnerships in New Deal for Communities**

| | |
|---|---|
| Birmingham (King's Norton) | Middlesborough (West) |
| Bradford (Little Horton) | Newcastle (West Gate) |
| Bristol (Barton Hill) | Newham (West Ham and Plaistow) |
| Brighton (East Brighton) | Norwich (North Earlham and Marlpit) |
| Hackney (Shoreditch) | Nottingham (Radford) |
| Hull (Preston Road) | Sandwell (Greets Green) |
| Leicester (Braunstone) | Southwark (Aylesbury Estate) |
| Liverpool (Kensington) | Tower Hamlets (Ocean Estate) |
| Manchester (Beswick and Openshaw) | |

Source: Department of Local Government, Transport and the Regions, 2001

Twenty-two further partnerships submitted bids and were successful in securing long term funding in 2001. This second round increased the total amount committed to NDC to around £2 billion over a ten year period. The 22 round 2 partnerships are shown in table 4.3 below.

**Table 4.3 Round 2 Partnerships for New Deal for Communities**

| | |
|---|---|
| Birmingham (Aston) | Lewisham (New Cross Gate) |
| Brent (South Kilburn) | Luton (Marsh Farm) |
| Coventry (Wood End, Henley Green, Manor Farm and Deedmore) | Oldham (Hathershaw and Fitton Hill) |
| Derby (Derwent) | Plymouth (Devonport) |
| Doncaster (Doncaster Central) | Rochdale (Old Heywood) |
| Hammersmith & Fulham (North Fulham) | Salford (Charlestown and Lower Kersal) |
| Haringey (Seven Sisters) | Sheffield (Burngreave) |
| Hartlepool (West Central Hartlepool) | Southampton (Thornhill) |
| Islington (Finsbury) | Sunderland (East End and Hendon) |
| Knowsley (Huyton) | Walsall (Bloxwich East and Leamore) |
| Lambeth (Clapham Park) | Wolverhampton (All Saints and Blakenhall) |

Source: Department of Local Government, Transport and the Regions, 2001

In each area the Department of Environment Transport and the Regions invited community-based partnerships to form and take responsibility for the regeneration of one neighbourhood of between 1,000 - 4,000 households. In this way, it was hoped that the communities, service providers and businesses would seize this opportunity to transform some of the most deprived neighbourhoods in the country.

The discussion has so far re-enforced the notion that since the 1990s, urban regeneration policies and practices have tended towards community participation and there is no indication of a slow-down in this trend, as the emerging re-orientation of the planning system suggests. The first new Planning Act for more than a decade was granted Royal Assent on 13 May 2004, paving the way for a more flexible and responsive planning system for England. This followed a series of procrastinations heralded by the Planning Green Paper for England - "Planning: Delivering a Fundamental Change", which was published by the then Department for Transport, Local Government and the Regions (DETR) in 2001. It was anticipated that the Planning and Compulsory Purchase Act would enable communities to play a more active role in creating better places to live and work, as well as making the planning system faster, fairer and more efficient - ensuring the right developments in the right place, at the right time. The Act would see the replacement of Regional Planning Guidance (RPG) with Regional Spatial Strategies (RSS). It represents the Government's commitment to fundamental reforms of the planning system to nurture a strategic, proactive force for creating inclusive, accessible, safe and sustainable communities (ODPM, 2004). The Act, further introduces statements of community involvement, requiring local authorities to demonstrate how the local residents are involved in the decision-making processes ( Marrs, 2004). At the time of writing, plans to speed up Scotland's Planning System and strengthen the involvement of local communities were also being unveiled by the Scottish Executive. The measures formed part of the executive's drive to make planning faster, more user friendly and representative of the views of local communities (Newstart, 2004)

Good as it looks to be, this burgeoning culture of community and other stakeholder involvement still leaves the pressing questions of the research unanswered: What level of community involvement is appropriate? Is there a critical balance of involvement? Are the local communities being over-consulted? This last question is an issue that the writer encountered whilst working as a Community Development Worker in one of the nine Housing Market Renewal Pathfinder programmes.

### 4.6.8 Housing Market Renewal Pathfinder programmes

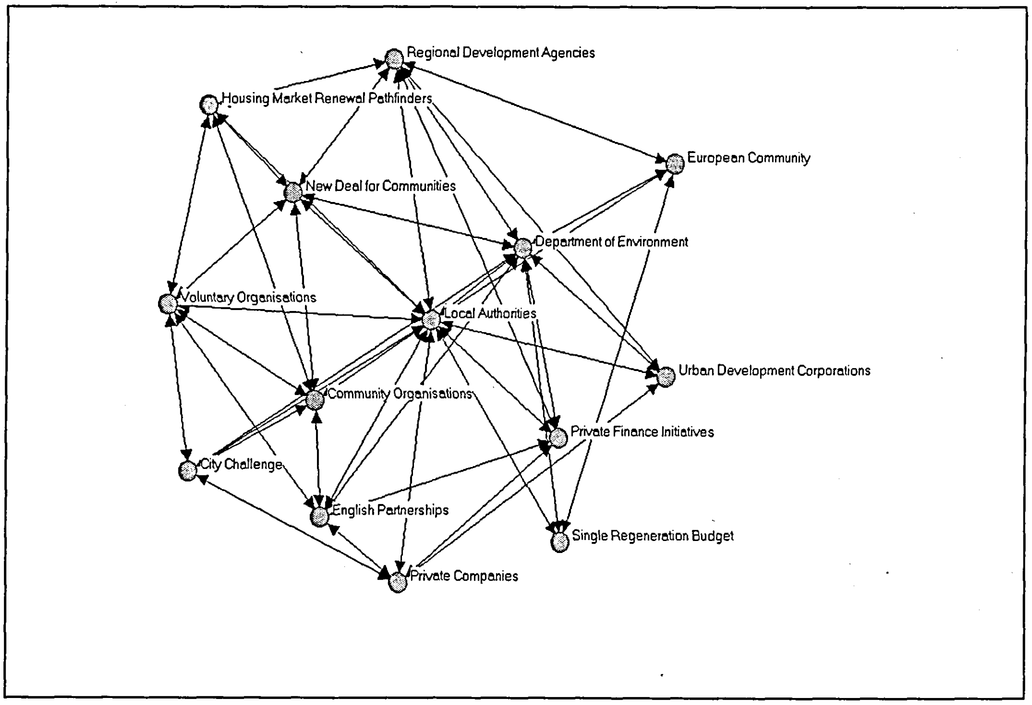
This is probably (at the time of writing) the newest of the urban regeneration initiatives in England. Housing Market Renewal Pathfinders (HMRP) are projects set up by the Office of the Deputy Prime Minister (ODPM) to tackle the most acute areas of low demand and abandonment in parts of the north of England and the Midlands and the associated impact on the lives of the people who live in these areas (ODPM, 2004). The programmes were launched in 2002 at which nine pathfinders were announced to take forward new approaches to tackling the problem of housing market failure over a period of 10 to 15 years. The programme areas cut across local authority boundaries with the expectation that these would create partnerships that would involve all stakeholders in developing strategic plans for whole housing markets. It was further anticipated that the partnerships would ensure that all the essential requirements of sustainable communities, especially good quality, customer focussed public services and a pride in the community and cohesion within it, are addressed, in line with the broad national strategy for neighbourhood renewal. The nine pathfinder projects cover the sub-regional housing market areas of:

- Newcastle and Gateshead;
- Hull and East Riding of Yorkshire;
- South Yorkshire (Sheffield, Doncaster, Barnsley, Rotherham);
- Birmingham and Sandwell;
- North Staffordshire (Stoke, East Newcastle-under-Lyme and East Biddulph);

- Manchester and Salford;
- Merseyside (Liverpool, Sefton and Wirral);
- Oldham and Rochdale; and
- East Lancashire (Burnley,Blackburn, Hyndburn, Pendle, Rossendale)

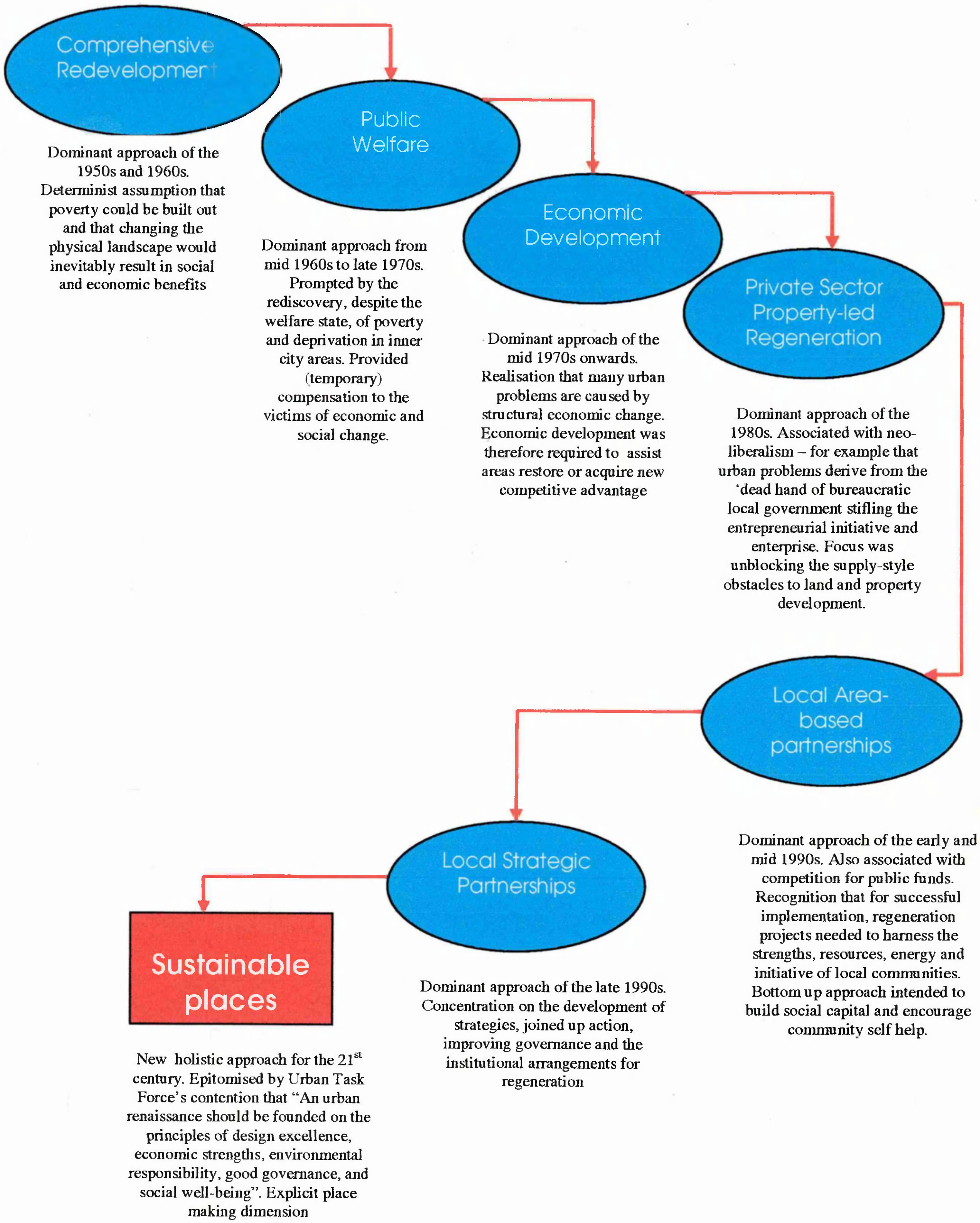
The identification of these pockets of low housing demand was done on the basis of a research carried out by the Centre for Urban and Regional Studies (CURS) at the University of Birmingham. An important aspect of the pathfinder initiative is that the partnerships would not be restricted to local authorities but are extendable to other key regional and local stakeholders, including the Regional Development Agency, representatives from the local strategic partnerships, police, education and health interests, housing associations as well as representatives from the private sector. Each of the nine pathfinders would be required by the Office of the Deputy Prime Minister to produce a 10 to 15 year plan of action and investment to rejuvenate the housing market and create the kind of neighbourhoods where people want to live. A key audit element of these action plans is, therefore, the extent to which they reflect the aspirations of local communities and other stakeholders, typical of the post-1997 Labour government policy as suggested earlier. A summary of connectivity (figure 4.4) in these post 1990s regeneration initiatives should therefore reveal a more interactive system than the mostly frozen alternatives prior to this period.

**Fig. 4.4 Power relations in the post 1990 regeneration initiatives**




The complexity (complicatedness) of urban regeneration initiatives that have mushroomed since the 1990s suggests increasing connectivity between the various initiatives and other stakeholders. As indicated above, there is also enough evidence of greater appreciation of community networks and their involvement in the decision-making processes of urban regeneration. A summary of the evolution of urban policy (fig 4.5) by the University of Aberdeen and Kevin Murray Associates (2004) also confirms this trend

**Fig. 4.5 Evolution of urban regeneration policy**

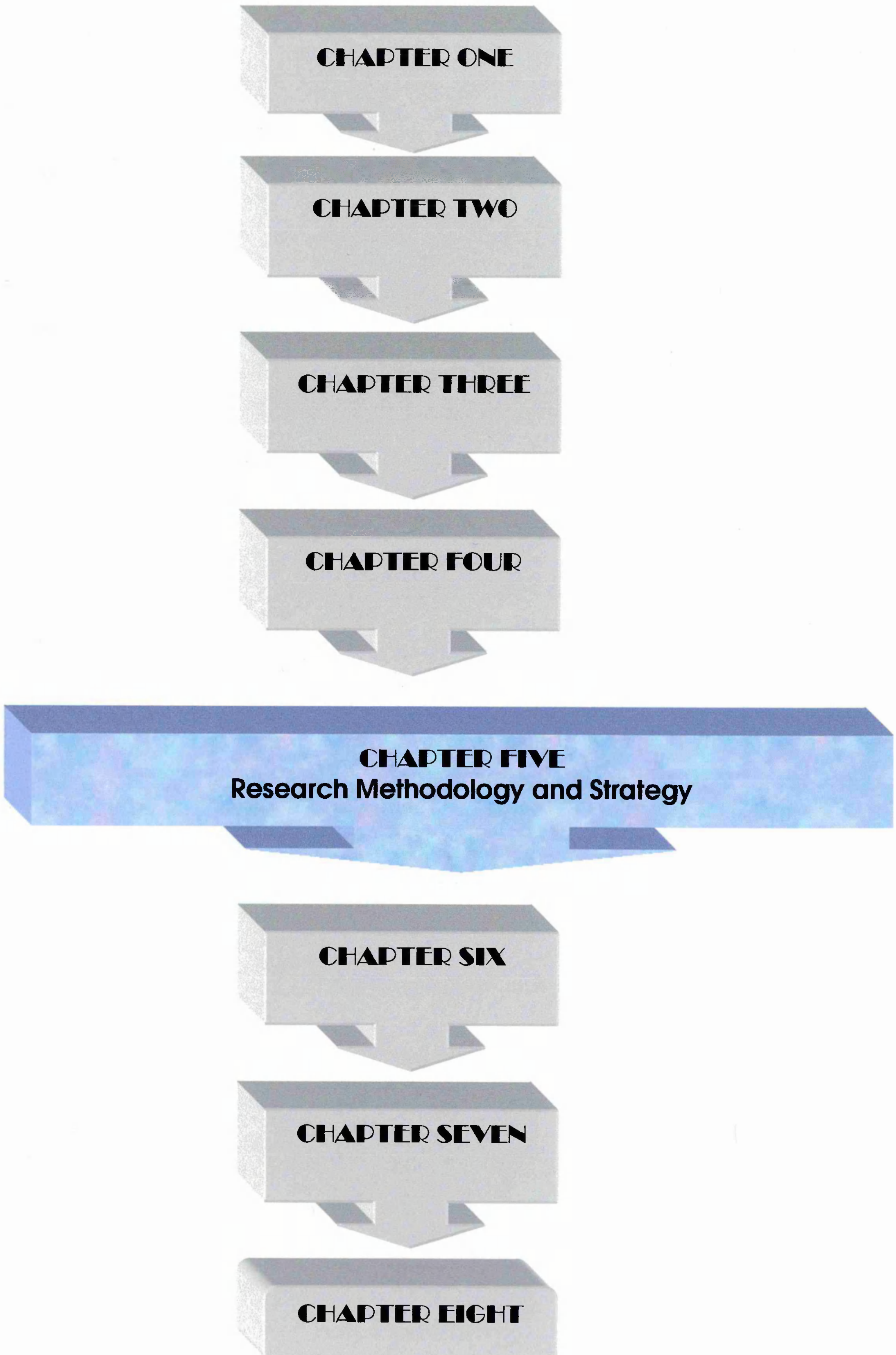



Source: University of Aberdeen and Kevin Murray & Associates, 2004

An important question of immediate relevance to the thesis of the research with regard to this account of urban regeneration is whether such connectivity and impetus for community involvement is a subject of emergence or a product of political wherewithal. It is compelling to be more inclined towards the former basically for two reasons. The first is that, as demonstrated earlier in the chapter, the signs of emergent behaviour in the community networks of regeneration started to manifest themselves as early as the late 1970s. Although suppressed in the 1980s, the evolutionary dynamics remained active and adaptive with occasional expressions of discontentment with the market-driven regime, such as in the case of public unrest in 1980 and 1981, to an extent of dragging the whole system towards a consensual nexus (edge of chaos?) in the latter half of the Thatcher years. Secondly, although there has been a two-phase change of government from Conservative (Thatcher) to Conservative (Major) and later to New Labour, the momentum gained by the emerging pluralistic phenomenon has been so irresistible that many of the community-based initiatives were not only rolled over across these political boundaries but given greater recognition through legislative instruments and policy frameworks. This chapter can only speculate on the authenticity of this hypothesis as it is given appropriate attention in the analysis of the research findings in chapter seven. For now, the evidence is only sufficient to draw one conclusion.

## 6.7 Conclusion

The decision-making mechanism in Britain's urban regeneration processes is still emerging from its frozen state of central control cemented by many years of faith in the top-down approach and legitimised by the scientific method of rational planning. The poverty of this broad approach in tackling the urban problem is evident in the sheer volume of urban initiatives that have been conceived and abandoned. The context of the different initiatives has been subject to the influence of the political ideologies that have subsisted since the end of the Second World War. Cutting across these political boundaries has been a general movement away from authoritarianism to a more pluralistic regime. Because of its ability to defy the odds of political frontiers, it is argued here that, this trend of decision-making in urban regeneration is a subject of emergence than a necessarily planned process. If one accepts this hypothesis, then it is only a single step to making a conclusion that the whole urban system is a complex self-organising system. But there is a bridge that needs crossing before that conclusion can be reached. The missing link is a more robust analysis of evidence from casework, which for this study, was conducted from the inner city area of Hulme in Manchester. Before turning to the complexity of decision-making in Hulme's urban regeneration processes, the report will now provide an outline of the methodological framework that facilitated the collection of evidence for the analysis.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# CHAPTER 5: RESEARCH METHODOLOGY AND STRATEGY

## 5.1 Introduction

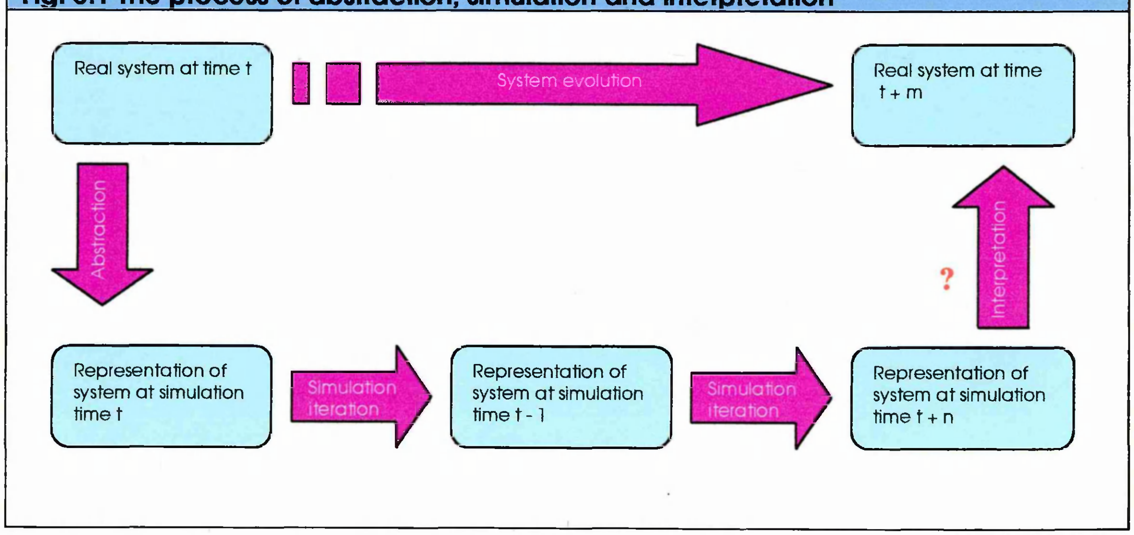
One of the frustrations of working in the new science of complexity is that there is no commonly accepted methodological framework. The reasons for this vacuum may be attributed to three themes: the very novelty of the subject matter on the research scene, the multidisciplinary nature of the theory; and the inherent dynamism in complex systems themselves. As discussed in chapter one, previous scholars and researchers have attempted to devise methods of understanding complex systems by the use of borrowed techniques from already established faculties. If at all necessary, it will perhaps take some time before an independent body of inquiry specific to complexity research is established. That is why the current study does not set-off at a tangent from the existing practice of borrowing methodological tools. The construction of a research methodological strategy is, therefore, the main pre-occupation of this chapter, in which social network analysis is proposed as the appropriate toolkit in the understanding of urban regeneration processes through complexity theory. Unlike much of the previous research and existing literature on social complexity, which have tended to emphasise the use of social simulation techniques, this study is based on mere social surveys. For this reason, the first task in the chapter is devoted to establishing a case for social surveys rather than social simulations, which issue is discussed immediately after this introduction. Section 5.3 looks at the case study (of Hulme in Manchester), particularly with reference to its suitability and adequacy in meeting the aims and objectives of the research. Since the research generally takes a historical perspective and heavily relies on archival records, a statement on the reliability of such data sources is made in section 5.4 of the chapter. Section 5.5 introduces social network analysis and a selection of its tools that are considered relevant to the needs of the study, especially as regards to how these fit within the overall complexity project. This should build a firm foundation upon which to lay an outline of the empirical research strategy in section 5.6, which is basically discussed within the framework of the research agenda. This penultimate section is crucial to the chapter as it spells out the types and sources of data, sampling techniques, the data collection strategies, the analysis of the data and the expected outcomes. The ultimate aim was to construct a research strategy with a maximum possibility of replication elsewhere. The last section (5.7) is a summary of the chapter.

## 5.2 Why social surveys and not social simulations?

The discussion begins by making a brief account of the place of simulation in social research so as to contrast it with the benefits of social surveys. Although the simulation of social change has a long history in the social sciences, the introduction of much more robust computers and computer programmes has led to an increase in simulation as a means of modelling and testing social theories. This methodological approach has equally found its expression in the new science of complexity, where it is increasingly being perceived as the only way to model and explore the dynamics of complex systems.

The logic underlying the methods of social simulation is consistent with the practice in conventional science, where real systems are abstracted into a formal representation (Johnson, 2001). The process is illustrated in figure 5.1 where Johnson attempts to replicate the "can you trust it?" problem of simulation, which was earlier highlighted by Casti (1997).

**Fig. 5.1 The process of abstraction, simulation and interpretation**




Source: After Johnson, 2001

The diagrammatical illustration of the logic of social simulation suggests that the process involves the iterative application of transformations to obtain a simulated system state at some point in future (Johnson, 2001). Its departure from conventional science lies in the attempt to interpret the simulated state. Here, both Johnson and Casti raise an important question about the logical foundation of this process, which argument is generally upheld in this study: Why should one accept that the simulated state may represent any possible real state or even one that can evolve in reality? Is there any justification for assuming that $t + m = t + n$? Unfortunately, this is one of the fundamental problems facing social simulations where the input parameters are less well defined than those of physical sciences. In the design of physical systems, the problem is less severe because many such systems can easily be disintegrated into smaller components and later pooled together in order to understand the global properties. This may not always be applicable in social systems where the gyrations from deterministic chaos are more likely to undermine the simulation by invalidating the transition rules between the initial (input parameter) conditions and the current (resultant) state. Social systems are sometimes so dependent on initial conditions that even when the transition rules are simple and straightforward, the emergent longer-term behaviour may be unpredictable, mainly because the initial conditions are not precisely given. It follows from this background, therefore, that the longer the timescale involved, the higher the chances of the process being twisted by deterministic chaos.

It is the above apprehensive dilemma associated with social simulations that primarily negated the adoption of this new methodological approach in the current study. The length of timescale involved, the diversity and sheer volume of agents participating in the regeneration processes all pointed to a prima-facie case for anticipated difficulties in engaging social simulation in the study. Even prior to the final abandonment of the option of social simulation, there was a real need to try and triangulate the data in order to build a full picture in the first place. It was, later in the course of the research design, decided that social simulation, fascinating as it might be, would not be the best approach to the understanding of the evolution of connectivity among agents of urban regeneration processes through complexity theory. An alternative had to be sought, and that option turned out to be the adoption of mere social surveys to facilitate social network analysis without having recourse to the fashionable agent-based computer simulation techniques. The extent to which social network analysis meets the needs of complexity research in general and particularly the aims and objectives of this research is a subject for a discussion in section 5.5, although a statement on the social surveys that produce the data for the analysis deserves instant citation.

Social surveys are a means of gathering descriptive data from a whole population or from a sample of a population. The aim is to find answers to specific questions from a whole population or from a representative sample of a population in order to produce quantitative data on the issue or issues being investigated. There are a number of techniques used to gather data in social surveys. The appropriate methods that were used in this research are outlined in section 5.7 where these are discussed within the context of the relevant research objectives. Before moving on to the issues surrounding the selection of the case study for the research, a further aspect that needs emphasis is the historical orientation of the analysis. In any analytical approach that aims to discover the pattern of change within a (social) system, the time element can never be overlooked especially in as far as one appreciates the fundamental notion that history enables an understanding of, and solutions to, contemporary problems to be sought in the past. In addition, history can help to elucidate the implications of key interactions among actors within a social system. The latter reasoning is at the very heart of one of the main tasks in this research in an attempt to achieve the objectives of the former. Like in all research projects, the literature search in a historical narrative type of research forms a critical part of the research to the extent that this can be used to reconstruct discernible patterns and to demonstrate their relevance to the research aims and objectives. The extent to which this aspect has been appreciated in this research is an issue that is discussed under the relevant research objectives, whose pursuit was conducted through the case study of Hulme in Manchester.

## 5.3 Case study selection: Hulme - Manchester

The initial criterion that was used in the selection of Hulme as the case study for the research was driven by the achievements of the City Challenge programmes sweeping across many English inner city areas suffering from multiple deprivation in the early 1990s. At the time of conception of the research project, City Challenge was said to be the most successful regeneration scheme ever initiated in Britain (Johnson, et al, 2000), and it would appear that this judgement still held true five years after the conclusion of the scheme. Within the 31 individual City Challenge programmes, however, not all them were a success. According to an evaluation of the entire City Challenge scheme carried out by consultants at KPMG, it turned out that the three City Challenge initiatives of Sunderland, Brixton and Bethnal Green did not have a single successful regeneration initiative as shown in table 5.1. On the other hand, the table suggests that Bradford (5 projects), Hulme (4 projects), and Tipton (4 projects) represented the most successful regeneration initiatives from City Challenge.

**Table 5.1 Successful projects from City Challenge programmes (marked X)**

| City Challenge | Codes | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | |
| Barnsley | x | | | x | | x | | | | | | | 3 |
| Batley | | | | | x | | x | | | | | | 2 |
| Bethnal Green | | | | | | | | | | | | | 0 |
| Blackburn | x | x | | | | | | | | | | | 2 |
| Bolton | x | | | | | | | | | | | | 1 |
| Bootle | | | x | | | | | | | | | x | 2 |
| Bradford | | | | x | | x | x | | x | x | | | 5 |
| Brixton | | | | | | | | | | | | | 0 |
| Dalston | x | | x | | | | | | | x | | | 3 |
| Dearne Valley | | | | x | x | | | | | x | | | 3 |
| Deptford | | | | x | | | | | | x | | | 2 |
| Derby | | | | | | | | x | | | | | 1 |
| Harleden | | | | | | | | | | | x | | 1 |
| Hartlepool | | | | | | | | x | | x | | | 2 |
| Hulme | | | | x | | x | | | | | x | x | 4 |
| Leicester | | | | | | | | x | | | | | 1 |
| Liverpool | x | | | | | | | | | | | | 1 |
| Middleborough | | | | | | | | | | | | x | 1 |
| Newcastle | | | | | | x | | | x | | | | 2 |
| N. S. Aston | | | | | | | | x | | x | | | 2 |
| N.Kensington | | | | x | | | x | | | | | | 2 |
| North Tyneside | x | x | | | | | | x | | | | | 3 |
| Nottingham | | | | | | | | x | | | | x | 2 |
| Stockton | x | | | x | | x | | | | | | | 3 |
| Stratford | x | | | x | | | | | | | | | 2 |
| Sunderland | | | | | | | | | | | | | 0 |
| Tipton | | | | x | | | | | | x | x | x | 4 |
| Warsall | x | | | | | | | | | | | | 1 |
| Wigan | | | | | | | | x | x | | | | 2 |
| Wirral | x | | | | x | | | | | x | | | 3 |
| Wolverhampton | | | x | | | | | | | | | | 1 |
| Total | 9 | 3 | 2 | 9 | 4 | 5 | 3 | 7 | 3 | 8 | 3 | 5 | 61 |

**Key**

| Code | City Challenge Project | Code | City Challenge Project |
|---|---|---|---|
| A | Development | G | Business support |
| B | Inward investment | H | Training / access to labour markets |
| C | Land reclamation/ site servicing | I | Crime prevention |
| D | Housing | J | Education |
| E | Transport | K | Health |
| F | Environment and amenity space | L | Community and social |

Source: Adapted from Johnson, et al, (1998)

Based on these ratings and the desire to draw lessons from both successful and failed cases, as well as ancillary considerations such as research (travel) costs, Hulme and Sunderland emerged as the two potential case studies for the research. However, it was not long before these criteria for selection were overtaken by other considerations that were perceived as more consistent with the complexity project. This led to the abandonment of the Sunderland case selection and the subsequent narrowing down of the whole casework to the inner city area of Hulme. Why was Hulme considered a suitable case in the study of urban regeneration processes as an emergent phenomenon and how adequate was it perceived in addressing the concerns of the research agenda?

The decision to single out Hulme as the lone case study for the research started with a few visits to the area by the researcher almost immediately after the conclusion of the initial selection process discussed above. Two important serendipitous discoveries were made during the visits, which were cardinal to the emergence of Hulme as the sole test case for the research. The first was in the Hulme Park where the historical account of the area is neatly engraved in a manner that establishes a prima-facie case for an evolving system. This panoramic set of historical notes appears to be an emblem of a Hulme that has since the late 18$^{th}$ century boasted of a rich blend of community activism founded on the interface between social welfare, concern for the physical environment, and the emergence of commerce. The second factor was unearthed from the various literature on Hulme as well as a visit to the Moss Side and Hulme (Regeneration) Partnership offices and was manifested in the form of a similar long history of the Hulme community spirit, unmatched by many of Britain's inner city areas.

As the preliminary search for the various agents of regeneration took pace, it was increasingly becoming perceptible that a very high volume of agents was involved such that handling the data would be onerous to the researcher's time and resources. This was exacerbated by the desire to net every possible agent, regardless of size and role, in conformity with one of the basic concerns of complexity theory - that even small, easy to neglect, initial effects can give rise to very unpredictable global behaviour for the system. Moreover, it was recognised at that very stage that the need to discover and understand pattern(s) in the evolution of urban regeneration processes is a higher faculty than comparing notes between cases, which may have divergent starting points, and different initial and transitional conditions altogether. It was on these grounds that the Sunderland case study was dropped, so as to focus attention on the evolution of Hulme regeneration processes. If there would be any comparison to make (and yes, there was), it would have to relate to the various stages in the evolution of Hulme - more of a historical comparison (longitudinal analysis) than a cross-regional (or cross-sectional) analysis. This does not, however, suggest that there was no cross reference of the Hulme situation with the wider perspective of the evolution of British urban regeneration processes. The whole of chapter four is devoted to an analysis of the plethora of urban regeneration initiatives in Britain dating as far back as the 1960s. In the chapter, an attempt has been made to find the place of the regeneration processes in the new science of complexity. The study also made a deliberate attempt to marry the historical account to the findings from the case study of Hulme for the purpose of establishing generalisability of the latter.

Because the bulk of the research predominantly embraces a historical approach, much of the data was sourced from archival records, particularly that for the first two objectives of the research. The use of such data sources has been received with reservations from certain corners of social research, though there doesn't seem to be any credible alternatives provided by these sceptics[1]. The reliability of archival records as a source of relational data is, thus, one big question that almost every proponent of the technique has to grapple with. The next section attempts to demystify this question by arguing that archival records can actually be (and are) a reliable source of social data.

## 5.4 From among the stack rats: Reliability of archival records

To understand the relevance and nature of archival data, the discussion starts from a broader perspective of historical research methods. Historical research is defined as "the systematic and objective location, evaluation and synthesis of evidence in order to establish facts and draw conclusions about past events. It is an act of reconstruction undertaken in a spirit of critical inquiry designed to achieve a faithful representation of a previous way" (Cohen and Manion, 1982). The primary enterprise is with history for the sake of understanding contemporary issues. Archival data is an essential element of historical research. This is the data that already exists and has been kept by relevant institutions over the years. Recognising the importance of archival data in the

[1] In his account of the uncalled-for scepticism about archival records, Hill, (1993) ends by cautioning that archival research is not a project for researchers who seek unchallenged truth.

study of emergent social phenomena is the easier part than defending the efficacy of such data sources.

The biggest problem is how to unearth social relations buried in archives, and perhaps forgotten, over many years. Ironically, researchers who have sought refuge in the auspices of archival data are never short of semantics to defend the technique (Hill, 1993). Rather than replicating these defence mechanisms already in place, the discussion concentrates on the strategies devised to go round the problems associated with archival data. In his study of the collapse of the American community, Putnam (2000) proposed three strategies to capturing social change over time. The core principle is being able to acknowledge the fundamental notion that no single data source is without flaws. The more numerous and diverse the data sources one employs, the less likely it is that they could all be marred by the same deficiencies. It is important, therefore, to triangulate from as many data sources as possible. The second strategy is to be found in the use of organisational records. These, according to Putnam, are the firmest sources because through them, it is possible to compare civic involvement over many years. The assiduous records kept by club secretaries, local council clerks, church leaders, etc over a given time-scale are much more reliable than frail recollections of how things were unfolding.

The difficulty is that, not all community-based organisations are involved in record keeping. Indeed many informal organisations exist without structure or permanent address and are therefore not easily accessible to a conventional researcher. In the third strategy, Putnam suggests that the absence of records can be offset by the use of a systematic social survey. A properly designed and focussed social survey can provide a useful snapshot of social connections, while a series of such surveys can, to some extent, yield a historic perspective of the social ties. The problem with this last strategy is that the current research needs were simply not there at the time that history was being created. In short, no one, at that time, ever thought of collecting the much needed data for contemporary research issues. There is an alternative, though, especially if the time horizon is not over stretched. Interviews with key individuals about their experiences, perceptions, or even contributions to the events of the period can be a valuable source of data that can be used to fill up the void left by the absence of written records. Before endorsing the use of archival records in the study, an evaluation criterion, involving four elements, was conceived as in table 5.2.

Table 5.2 Verifying archival records as sources of data in the regeneration of Hulme

| Evaluation criteria | Questions to Ask | Evidence in the Case of Hulme |
|---|---|---|
| Relevance | Are the records relevant to the study? | Archival records were identified early in the research design as the firmest indicators of social change in the regeneration of Hulme over a time scale spanning ten years. |
| Consistency and accuracy | Are the records consistent, accurate and replicable? | Through a process of triangulation among many sources of data, such as the Central library, the local library, and the County Records Office, the study revealed consistent patterns in the connectivity data in Hulme over the reference timescale. |
| Reliability | Can the sources of data be accessed? | The pilot survey that was conducted with a sample of agents in Hulme suggested minimal difficulty in accessing social data in Hulme |
| Sufficiency | Are the data sets sufficient to reach a conclusion? | The high volume of connectivity data sets that were unearthed together with the inherent consistency suggested that these were sufficient to meet the concerns of the study |

Once the hurdles surrounding the data sources and collection have reasonably been overcome and the data has actually been pooled together, the issue of analysis needs not be a difficult undertaking because the appropriate tools are readily available in social network analysis.

## 5.5 Using social network analysis in social research

Social network analysis is the mapping and measuring of relationships and flows between entities (Krebs, 2002). The network units may vary from individuals to groups, organisations or other information and knowledge processing agents. The concept is founded on the notion of uncovering the patterning of interaction among the agents and is based on the intuitive notion that the patterns are important features of the lives of the entities that display them. The utility of this methodological toolkit in complexity research is given appropriate detail in section 5.5.5 below.

### 5.5.1 Type of data used in social network analysis

The type of data used in social network analysis is called "relational data". Relational data (as opposed to attribute and ideational data) are the contacts, ties and connections, the group attachments and meetings, which relate one agent to another and so cannot be reduced to the properties of the individual agents themselves (Scott, 1982). Relations are not the intrinsic characteristics of individual agents, but systems of agents and these relations connect pairs of agents into larger relational systems. Many of the relational properties are measurable, including, the strength of friendships, kinship obligations among family members, economic exchanges between organisations, communication relations, etc. Although it may be possible to undertake quantitative and statistical counts of relations, network analysis consists mainly of a body of qualitative measures of network structure. Relational measures serve to capture emergent properties of social systems that cannot be measured by simply putting together the attributes of individual members. However, such emergent properties may significantly affect both system performance and the behaviour of network members and that is why contemporary social scientific inquiry requires combinations of both attribute and relational data and the creation of measurement and analysis methods capable of incorporating them. Attributes are the intrinsic characteristics of people, objects or events (Knoke and Kuklinski, 1982). They relate to attitudes, opinions and behaviour of agents, in so far as these are regarded as the properties, qualities or characteristics that belong to them as individuals or groups (Scott, 1991). The combination approach was equally adopted in this study in an attempt to discover patterns in the evolution of social connectivity (relations) and how this relates to the socio-economic landscape (attributes) of the case study area. This was achieved by a careful usage of appropriate basic elements of social network analysis.

### 5.5.2 Levels of analysis in social network analysis

There are four conceptually distinct levels at which an investigation into social networks can focus, namely egocentric, dyadic, the triad, and the complete network (Scott, 1992). The egocentric level focuses on an individual node, the dyad on a pair of nodes, and a triad on three nodes. The fourth and most common level of analysis is that which embraces the complete networks. In the complete network analysis, a researcher uses the complete information about patterning of ties among all actors to ascertain the existence of distinct positions or roles within the system and to describe the nature of relations among these positions. Even if the sample may consist of n nodes and ($n^2$ - n) possible dyadic ties of a given type, these elements altogether add up to only a single system. Therefore, in order to test hypotheses about the causes and consequences of variation in complete network configurations, it is necessary to have several distinct systems, which may have a bearing on the researcher's resources. In conformity with the principles of complexity theory, this research employs the complete network analysis to unearth patterns in the regeneration networks. Complete network analysis has become one of the most popular levels of analysis in recent years with the growth of new techniques to handle its particular problems. Part of these new techniques are embedded within the common concepts of social network analysis, under the umbrella term of "graph theory".

### 5.5.3 Graph theory and the tools of social network analysis

Graph theory deals with sets of elements and the relations among them (Scott, 1992). The elements are called points while the relations are termed lines. Data in social network analysis can be presented in social matrix format or in the form of sociograms, where in either case the two basic units are the nodes (agents) and the connections (relations) among the agents. In social matrices, the presence of a relation between any two agents is represented by a one (in the case of simple unvalued graphs), while a zero entry denotes absence of a connection. In sociograms, however, the ones are replaced by lines, and no line is drawn where there is no relation. These two basic elements of social network analysis take various forms, depending on the researcher's needs and focus of attention. In the current study, an agent is an organisation involved in the regeneration of Hulme, while a line represents the existence of (any form of) communication among the agents. The information in a graph can be represented by a matrix known as the *adjacency matrix*, in which a given cell X(i,j) contains a value of 1 if nodes *i* and *j* are connected, and 0 otherwise. In other words, a graph G = (V,E) with vertex set V and edge set E can be represented as a square symmetric 1-mode matrix *X*, known as the *adjacency matrix*, in which X(i,j) = X(j,i) = 1 if (i,j) belongs to E and X(i,j) = X(j,i) = 0 otherwise (Borgatti, 1999). The rows and columns of the adjacency matrix, therefore, correspond to the nodes of the graph, and the cells in the matrix correspond to pairs of nodes or *dyads*. A matrix value X(i,j) = 1 indicates the presence of a link between node *i* and node *j*, and X(i,j) = 0 indicates the absence of a link (ibid).

These graphs of networks (as opposed to graphs of variables) are concerned with the qualitative connections among the points. The various types of lines that are used in the construction of graphs correspond to any of the following relational data: undirected, directed, valued, or both directed and valued. Undirected line graphs are derived from asymmetrical data matrix where it is simply the presence or absence of a relation, which is important. A directed graph (or digraph) is one where the relations are directed from one agent to another. Conventionally, the direction of the arrow indicates the direction of the relation. Sometimes the intensity of the relation is an important consideration and this can be represented by a numerical value attached to each of the lines. The current study ignores the direction of relations in the analysis because it was felt that it is only the existence or absence of a relation between agents that is needed to meet the aims of complexity. Graph theory stocks a host of these network elements, including degree, density, centrality, path, cliques, etc. It must be stressed here, however, that the intention in this study is not to use comprehensive social network analysis, but rather to simply borrow and apply those analytical tools that are relevant to the complexity project in general and to this research in particular. Readers wishing to explore the full potential of social network analysis are referred to a wide range of texts such as Scott, 1992, Wasserman, 1994, Knoke and Kuklinski (1982), etc. However, a few of the tools of analysis are of immediate relevance to this research and therefore deserve identification. These include the concepts of density, centrality, and clique analysis.

**Density**

To understand density and its related concepts, a prior understanding of the concepts of degree of a point and adjacency are a necessity. Two points are said to be adjacent if they are connected to one another. The points to which a particular point is adjacent are termed its neighbourhood. The total number of other points in the neighbourhood is known as its degree (of connectivity). Therefore, the degree of a point is a numerical measure of the size of its neighbourhood. This is shown by the number of non-zero entries for that particular point in a social matrix. Density is one of the most widely used concepts of graph theory. It describes the general level of linkage among the points in a graph. The higher the number of points connected to one another, the denser the graph is. Measuring density entails comparing the actual number of lines present in a graph with the total number of lines that would be present if the graph was complete. The number of lines in any graph is equal to half the sum of the degrees. The maximum number of lines, which could be present, can easily be calculated from the number of points that it contains. Density is, therefore, calculated by using the following formula:

$$d = \frac{l}{n(n-1)/2}$$

Where $d$ is the density, $l$ is the number of lines present and $n$ is the number of nodal points.

**Degree of centrality**

The concept of centrality has its origins in the sociometric concept of the star, where a central point was considered as one that was at the centre of a number of connections (Scott, 1992). Its simplest definition is that central actors must be the most active in the sense that they have the most ties to other actors in the network (Wasserman, et al, 1994). There are two type of centrality, local and global centralities. Local centrality is when a point has a large number of connections with other points in the immediate environment. Global centrality is when a point has a position of strategic significance in the overall structure of the network. Therefore, local centrality is concerned with the relative prominence of a focal point in its neighbourhood, while global centrality relates to prominence within the whole network. The easiest way to measure centrality is by the degrees of the various points in the graph. A point is said to be central if it has a high degree. This corresponds to the intuitive notion of how well connected a point is within its local environment.

**Betweenness centrality**

A further concept related to point centrality is that of betweenness. This concept measures the extent to which a particular point lies "between" the various other points in the graph. It measures the extent to which an agent can play an important intermediary role, regardless of its degree, and thus have potential for control over other agents. The approach is founded on the concept of local dependency. A point is dependent upon another if the paths which connects it to the other points pass through this point. The overall betweenness of a point is calculated as half the sum of the values in the columns of a matrix.

**Cliques**

A Clique is simply a subset of points in which every possible pair of points is directly connected by a line and such a clique is not contained in any other Clique. Cliques are a rarity in real social networks. This concept is quite often used to detect and analyse collaborative tendencies among agents within a network.

Pursuance of all these concepts of social network analysis can sometimes pose patches of challenges to the researcher, especially with regard to collection and handling of relational data.

### 5.5.4 Common problems in handling relational data

Although there are distinct types of data in social science research, with their associated methods of analysis, there is nothing specific about the methods of data collection which can be used to produce them. There is nothing that distinguishes methods for the collection of attribute data from those of relations. The two types of data are often collected alongside one another as integral parts of the same investigation. The data collection can be by way of questionnaires, interviews, observations, or texts. Thus, many of the general considerations and problems involved in the handling of relational data are those which are common to all social science data of gaining access, designing questionnaires, drawing samples, dealing with non-response, data storage, etc. However, there are basically two immediate major problems associated with data selection in social relations research: the identification of boundaries and the definition of the target populations (Scott, 1992).

The determination of network boundaries is not simply a matter of identifying the apparently natural or obvious boundaries of the situation under investigation. Although natural boundaries may exist, the determination of boundaries in a research project is the outcome of a theoretically informed decision about what is significant in the situation under investigation. A study of political relations, for example, must recognise that what counts as political and the choice of boundaries for the relevant political unit are all theoretically informed decisions. Researchers are involved in a process of conceptual elaboration and model building, not a simple process of collecting pre-formed data.

Assuming that relevant boundaries can be identified, the research may proceed to define the target population for the study. There are three general approaches to achieving this task: the position, reputation and event-based approaches (ibid). In the position approach, the researcher samples from among the occupants of particular, formerly defined, positions or group members. The starting point is the identification of positions or groups, which are of interest and then sampling their occupants or members. A common problem with position studies is that of determining which positions to include, which aspect reflects the general boundary problems identified above. It is, therefore, important that researchers have theoretically and empirically justifiable reasons for the inclusion or exclusion of particular positions. The reputation approach can be used where there are no relevant positions or where the knowledge of the agents themselves is crucial to the determination of boundaries of the population. In this approach, the researcher studies all or some of those named on a list of nominees produced by knowledgeable informants. The list consists of those who are reputed to be the members of the target population. The researcher must have good reasons to believe that the informants will have a good knowledge of the target population and are capable of accurate reporting on the matter. Whether or not this is the case will often be known only when the research has been completed, and so there is an element of circularity in the strategy. For this reason, researchers ought to endeavour to come up with theoretical and empirical reasons for the choice of informants which are, so far as is possible, independent of the particular social relations under investigation.

Having introduced the basic tools of social network analysis, it is now appropriate to consider the relevance of social network analysis in the study of complex systems. Does social network analysis share any platform with complexity research?

### 5.5.5 The place of social network analysis in complexity research

There is a fine correspondence between social network analysis and the basic foundations of complexity theory. The major unifying factor is the emphasis on connectionism and emergent behaviour. In social network analysis, for example, it is held that the organisation of social relations is a central concept in the analysis of the structural properties of the networks within which individual actors are embedded, and for detecting emergent social phenomena that have no existence at the individual level. This is perfectly synchronised with the complexity project where it is generally argued that, regardless of how they are defined, each constituent element of a complex system finds itself in an environment that is a product of its relational contact with other agents in the system. This is a fundamental commonality between the two dimensions of research, which in the considered opinion of the researcher, merited the adoption of social network analysis tools in the study of urban regeneration as an emergent process. Another point of intersection between the two faculties can be found in complexity theory's edge of chaos hypothesis, which, as the subsequent discussion suggests, is more of a metaphor for the "old wine in new bottles" than a purely new invention of the complexity revolution.

Thus, although the term itself, "edge of chaos" is relatively new, many writers in various fields have exposed the fundamental principle behind it, at different times in the past. In the field of social network analysis, Granovetter (1973) dwelled on something that directly hovered on the edge of chaos principle. In his theory, "the strength of weak ties", he proposed that weak ties are often more important than strong ties in understanding certain network-based phenomena. His argument is based on the assumption that strong ties tend to bond similar people to each other and these similar people tend to cluster together in such a way that they are all mutually connected. The innovation obtained through such a network tie is likely to be redundant. The network is, therefore, not a channel for innovation (Krackhardt 1992). By contrast, a weak tie is likely to provide new information from disparate parts of the system. The theory, therefore, argues that tie strength is curvilinear with a number of dependent variables i.e. extremely weak tie is of little consequence; a weak tie provides maximum impact, and a strong tie provides diminished impact. This spells out the edge of chaos principle whereby: extremely weak tie is reminiscent of the chaotic regime; strong tie denotes too frozen a system; and weak tie is the edge of chaos. Almost twenty years later, Burt (1992) built on Granovetter's insight through the concept of "structural holes." In Burt's view, it is the relative absence of ties (labelled structural holes) that facilitates individual mobility. Dense networks, according to Burt, tend to convey redundant information while weaker ties can be sources of new knowledge and resources (Portes, 1998).

With the research tools having been defined and the reasons for their adoption spelled out, the remainder of the chapter is devoted to the empirical aspect of the research approach. This, as suggested earlier, is being discussed within the framework of the three research objectives outlined in chapter 1 and replicated here for reasons of clarity.

## 5.6 The research strategy and approach

The aim of the research was to consider the application of complexity theory as a potential basis for analysing urban regeneration processes. The pursuit of this aim was conducted through an investigation into the following three objectives:

1) The implications of central control on decision-making in urban regeneration processes.

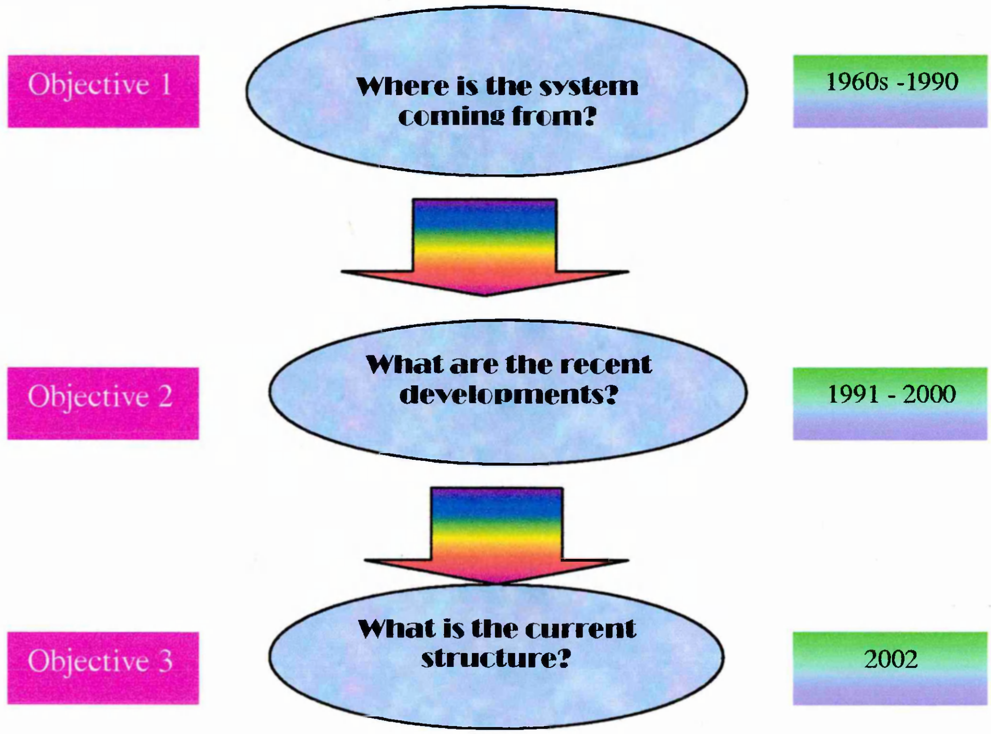
2) The evolution of community connectivity and how this relates to the outcomes urban regeneration processes.

3) The nature of existing social networks among the various agents of urban regeneration, and the conditions under which such connectivity thrives.

The research also sought to test the hypothesis that urban regeneration is more of an emerging, and self-organising system, than a planned process. Upon this grand argument is a host of research questions such as: Is there a critical level of central control that allows for maximal innovation in urban regeneration processes? Is there a similar critical volume of participation and density of connectivity among agents in the regeneration processes? When urban regeneration programmes are (centrally) planned, is the resultant situation a product of, design? accident? or complexity?

The research aim, objectives and hypothesis were intended to put the inquiry into a three-phase historical perspective as in illustrated in figure 5.2 below.

**Fig 5.2 The context of the research objectives**




### 5.6.1 Objective 1: Implications of central control on urban regeneration processes

This objective primarily investigated the extent to which urban regeneration processes can be conceptualised as complex self-organising systems. The investigation was influenced by the underlying argument that there exists a certain level of central control that allows for maximal innovation in urban regeneration processes. The level is ideally an abstract phase transition between central control and the power of local communities.

To meet this objective, the study employed a historical narrative approach in which the dynamics in the evolution of the regeneration processes of the inner city area of Hulme were weighed against the theoretical underpinnings of complexity. A ten-point criterion (Cilliers, 1998) was initially adopted as the basis for testing the complex adaptiveness of urban regeneration processes. The qualification criteria, according to Cilliers, are defined by the ten questions in table 5.3

| **Table 5.3 Testing the complexity of a system** | |
|---|---|
| Multiple agents | Does the system involve multiple agents? |
| Interactivity | Are the agents engaged in some form of interaction? |
| Value of interactions | Are the interactions rich enough to drive the system? |
| Non-linearity | Are the interactions linear or non-linear? |
| Local action | Are the interactions short or long range (local or global)? |
| Feedback | Is there evidence of feedback processes in the interactions? |
| Adaptation | Does the system adapt to its environment? |
| Equilibrium is death | Does the system operate under equilibrium conditions? |
| Local information | Are agents ignorant about behaviour of system as a whole? |
| Emergence | Is there evidence of evolution (to the edge of chaos)? |

Source: Adapted from Cilliers, 1998

A close analysis of this check-list revealed that most of these points are mere repetitions and / or variations of the same themes, and that they can actually be summarised into a narrower test framework consistent with Waldrop's (1992) characterisation of complex adaptive systems. The criterion was, therefore, reduced to a five point framework as follows.

**Multiplicity of agent involvement**

All complex systems consist of a large number of elements. The behaviour of a relatively small number of agents can often be given a formal description through the scientific method. However, where the number of agents becomes so large that the conventional approaches are stretched to their limits, one would begin to consider defining the system in complexity terms, though it is important to quickly stress that this alone is not a sufficient qualification. Since the unit of analysis in this research was the organisation, testing the presence of multiple agents was done by way of enumerating these various participants in the regeneration processes. This was not an easy task especially when dealing with long range timescales like, in this case, 1960 to 1990. The historical narrative was based on evidence from interviews as well as the various sources of literature on Hulme.

### Connectivity and self-organisation

The volume of agents is a necessary but not sufficient qualification for complex systems. In addition to numbers, the agents must be engaged in some form of interactions among themselves. The interactions among agents are responsible for the spontaneous self-organisation quality of complex systems. The testing of this characteristic feature was equally based on a qualitative historical narrative of the regeneration of Hulme between 1960 and 1990. It is neither possible to quantify connectivity between agents of regeneration over this timescale nor is it desirable. At this level of analysis, what was sought was evidence of interactions among the multiple agents of regeneration in the form of meetings and any other collaborative efforts among organisations concerned with the welfare of Hulme. Such evidence was unearthed from the review of literature on the historical evolution of Hulme.

### Multiple levels of organisation

Complex systems have many levels of organisation, with agents at anyone level serving as building blocks for the agents at a higher level. This attribute was investigated by analysing the structure of decision-making processes in the affairs of Hulme so as to identify natural levels of organisation.

### System dynamics and sensitivity to initial conditions

Complex systems possess a kind of dynamism that qualitatively distinguishes them from merely complicated objects. This attribute is also explained in terms of chaos theory, which emphasises sensitive dependence on initial conditions. Thus, in complex systems, any agent, regardless of size and status, stands a chance of influencing the whole system. To test for this characteristic feature, the study sought to isolate evidence that pointed to the difficulties of employing predictive models in the regeneration of Hulme rather than tracing the causal mechanisms of particular agents. The system dynamics are basically a product of the system's pursuit of its adaptive tendencies.

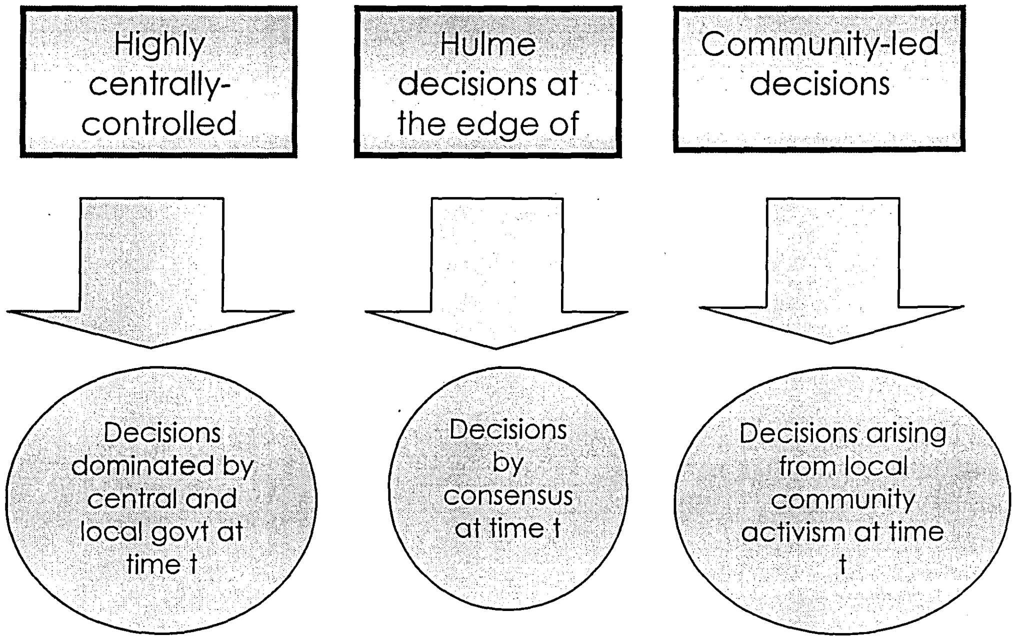
### Evolution to the edge of chaos

Complex systems are adaptive in that they do not passively respond to events, but actively try to turn whatever happens to their advantage. The systems are constantly rearranging their building blocks as they gain experience. Adaptation itself occurs as the system evolves, in the midst of constraints, to the edge of chaos, a special kind of balance between the forces of order and those of chaos, and where systems attain maximum innovation.

The first four points were primarily aimed at testing the question of whether, and how well, urban regeneration processes fit the characteristics of complex systems. The fifth went a step further by addressing the question of appropriate level of central control in urban regeneration decision-making processes, using the edge of chaos hypothesis. This part of the investigation largely involved qualitative analysis of the historical data, which was collected from a variety of sources in Manchester, including the Hulme library, Manchester Central library, Manchester City Council's Planning Studies Unit, Voluntary Action Manchester (VAM), and the County Records Office. Interviews were also conducted with 3 residents (out of a target of 5), including a former Councillor, to seek their experiences, perceptions of, or contributions to Hulme during the period under consideration. It became necessary to minimise the target population for interviewing because it was rightly anticipated that very few people had lived in Hulme consistently since the 1960s so as to relate their experiences and perceptions of change in Hulme. This was eventually confirmed by the fact that only three out of the targeted five were actually found and interviewed.

The contextual analysis from written records equally followed the above pattern in the quest for complexity tendencies in the regeneration processes over this time period. In particular, archival records were essential in the mapping out of the evolution of the decision-making mechanism to an edge of chaos kind of transition, using the framework represented by figure 5.3 below.

**Fig. 5.3 Framework for surfing the edge of chaos in Hulme, 1960 - 1990**




In the search for patterns, an attempt was made to isolate key events in the decision-making mechanisms and to classify these under the three categories of central control, community in control, and the in-between case of the edge of chaos - where consensus between the two extremes was evident. The events were further classified according to the different stages (time t) in the evolution of Hulme regeneration so as to relate them to the outcomes of the decision-making processes. The analysis was then translated into an investigation involving a qualitative usage of Stuart Kauffman's NK landscape model, illustrated in chapter two, so as to assess the evolution of the system to the edge of chaos.

The model provided grounds for a qualitative analysis of the decision-making frameworks that worked, and the pattern of events that led to such mechanisms in Hulme. There are (were) no practical means of quantifying the innovativeness associated with different stages in the evolution of the decision-making processes, hence the deployment of a purely qualitative assessment of the general feeling of contentment on the part of the two sides of order (central control) and chaos (community-led decision-making). Ascension on the "NK" landscape is thus determined in terms of the qualitative proximity of the two sides towards achieving consensus. In this regard, the peak of the model is an important aspect as it is used to evaluate (again qualitatively) the innovativeness of the Hulme regeneration processes against the previous alternative stages.

### 5.6.2 Objective 2: Social networks and urban regeneration, 1990-2000

The second objective of the research focused on the evolution of social connectivity between agents of regeneration in Hulme over the period 1990 and 2000. The main task was to investigate the existence of correlation between the changes in social connectivity and those of the social and economic lives of the people within that particular society. It was based on the emphasis by both complexity theorists and social network analysts on the importance of connectionism in driving whole systems. The investigation was, therefore, conducted at two levels – with the first phase consisting of an organic analysis that mapped out the structure of social networks at different stages between 1990 and 2000. The parameters of this structural inquiry included the following social network analysis tools: density of connections, degree centrality, betweenness centrality, and the volume of community participation. The second level of analysis was a functional test that traced the changes in the social and economic aspects of deprivation so as to relate them to those of the organic analysis. Each of the elements of social network structure was plotted against the deprivation indices on time-series graphs.

Most indicators of deprivation are flawed by noisy elements within them and are notoriously difficult to pin down to objective units of analysis. In the British studies of deprivation at district level, seven main indicators have generally been adopted as the yardstick for measuring multiple deprivation in inner city areas and these include unemployment, income support, housing (overcrowding and lack of basic amenities), health (standardised mortality ratios), education, environment, and crime (DETR, 2000).

Whilst generally endorsing the above indicators as the most comprehensive list in the measurement of multiple deprivation, it soon dawned to the researcher that it would not be possible to locate all these data elements at a ward level and in a time series perspective spanning ten years back. Consequently, the check-list was reduced to the four items of education, crime, unemployment and health. Apart from being recognised by the researcher as the best achievable approximation of the full picture of deprivation, these four indicators have been identified by the central government as the key factors in guiding the decision-making processes regarding areas suffering from multiple deprivation (ibid). Existence of any correlation between social network parameters and the socio-economic indicators of deprivation was not being construed as constituting a causal relationship. Rather, it was used to highlight the tendential character of any such relationships.

### 5.6.3 Objective 3: Network structure and the quest for an enabling environment

This third objective of the research was closely linked to the second in that both investigated the social connectivity within urban regeneration processes. The differences were in the timescale, data sources and the level of detail. While archival records proved useful in unearthing the evolutionary dynamics of the regeneration of Hulme between 1990 and 2000, they fell short of providing a robust and detailed structural picture of the networks. The third of the research objectives attempted to bridge this gap. Using social survey questionnaires, it was possible to probe all forms of communication linkages among the agents of regeneration in existence at the time of the surveys. Though the analysis was at best a snapshot of the structure of the social networks among the agents active in the regeneration processes in 2002, it was anticipated that this would offer an essential insight into the social connectivity in urban regeneration processes. This was achieved with the help of a hybrid approach that embraced both quantitative social network analysis and qualitative analysis of evidence from the social surveys, whose range of issues sought is outlined below in table 5.4

| Table 5.41 Structure of questionnaire for the Hulme social surveys | |
|---|---|
| **Main task** | **Details** |
| About the organisation | Name |
| | Classification |
| | Respondent's position |
| | Organisation's main preoccupation |
| | Age in Hulme |
| | Motivation to be in Hulme |
| | Membership |
| | Projects in Hulme |
| Relationships with other organisations | Frequency of communication |
| | Type of relationship |
| | Medium of communication |
| | Importance of relationship |
| Other organisations not mentioned in questionnaire | As part of snowballing outward |
| Other comments | For respondents to express other issues they wish to raise |

The data for this particular investigation related to connectivity among the various agents of regeneration. The relations themselves were defined in terms of communication among agents. As table 5.3 above suggests, an attempt was made to investigate all forms of communication which were classified as either meetings or non-face-to-face arrangements such as telephones, fax, electronic mails, etc. A full copy of the questionnaire, which was availed in paper format as well as online (at http://homepages.shu.ac.uk/~cmoobela) is in appendix 1. The frequency and medium of communication were used to determine the value of connections between agents. The type of relationship was meant to suggest the direction of the relationship and to investigate any interdependencies between the agents. This was later abandoned in preference for non-directional data analysis as the latter was found to be irrelevant to the concerns of the research because, as noted above, what was more important was the mere existence of a relation than its direction. For example, it became apparent during the analysis that the flow of financial relations between agents was not always a sustainable basis but was in most cases a one-off arrangement which did not account for the direction of the relationship between the agents concerned.

**Triangulation and sampling**

The data for this particular investigation related to connectivity among the various agents of regeneration. The relations themselves were defined in terms of communication among agents. As table 5.3 above suggests, an attempt was made to investigate all forms of communication which were classified as either meetings or non-face-to-face arrangements such as telephones, fax, electronic mails, etc. The frequency and medium of communication were used to determine the value of connections among agents. The type of relationship was meant to suggest the direction of the relationship and to investigate any interdependencies among the agents. The direction of relations was later abandoned in preference for non-directional data analysis as the latter was found to be irrelevant to the concerns of the research. For example, it became apparent during the analysis that the flow of financial relations among agents is not always a sustainable basis but is in most cases a one-off arrangement which does not account for the direction of the relationship between the agents concerned.

The data for the analysis was collected by way of issuance of questionnaires to the 62 agents of regeneration shown in table 5.42 below and reflected in appendix 3 and figure 7.62

**Table 5.42 Agents of regeneration in 2002**

| | |
|---|---|
| COM02 | Acorn Fund |
| COM04 | A-fe-we Pub |
| COM05 | Africa Caribbean Mental Health Project |
| COM07 | Aisha Child Caring Project |
| COM10 | Asian Women's Outreach Project |
| COM11 | Birley Centre Consultative Group |
| COM19 | Diverse Resources |
| COM20 | Drug Advice and Support in Hulme (DASH) |
| COM22 | Family Advice and Community Resource Centre |
| COM26 | Healthy Living Network |
| COM28 | Hulme Action Resource Project (HARP) |
| COM31 | Hulme Alliance of Tenants and Residents |
| COM33 | Hulme Community Computing |
| COM35 | Hulme Community Homes ltd |
| COM37 | Hulme Health Forum |
| COM40 | Hulme Project Office |
| COM42 | Hulme Tenants Participation Project |
| COM43 | Hulme Voluntary Organisations Group |
| COM45 | Kath Locke Centre |
| COM46 | Lesbians' Community Project |
| COM51 | Moss Side and Hulme Community Development Trust |
| COM52 | Moss Side and Hulme Community Safety Group |
| COM56 | National Phobics Society |
| COM57 | NIA Centre |
| COM59 | Royce Family Club |
| COM65 | Youth Support Project |
| COM66 | Zion Arts Centre |
| COM67 | Zion Community Resource |
| GOV01 | Crime Stoppers |
| GOV02 | Government Office for the North West |
| GOV04 | Hulme Adult Education Centre |
| GOV06 | Hulme Housing Office |
| GOV07 | Hulme Library |
| GOV10 | Manchester City Council |
| GOV12 | Manchester Housing |
| GOV17 | Moss Side and Hulme Partnership |
| GOV19 | North Hulme Adventure Play Ground |
| GOV20 | Rutland Day Nursery |
| GOV21 | Victim Support Unit |
| OTH01 | Arawak Housing Association |
| OTH03 | Ducie High School |
| OTH05 | Family Housing Association |
| OTH06 | Housing Corporation, North West |
| OTH09 | Lorretto College |
| OTH11 | Manchester and District Housing Association |
| OTH15 | Martenscroft Centre |
| OTH16 | Moss Care Housing Association |
| OTH18 | North British Housing Association |
| OTH19 | Parish Church of the Ascension |
| OTH20 | People First Housing Association |
| OTH23 | Royce College and Primary School |
| OTH25 | St. Philips College and Primary School |
| OTH26 | St. Wilfrid's Catholic Church |
| OTH27 | St. Wilfrid's Primary school |
| OTH28 | The Guiness Trust Housing Association |
| OTH29 | Trinity High School |
| OTH30 | United Reformed Church |
| PRC01 | Amec Plc |
| PRC04 | Firmstart (Manchester) ltd |
| PRC05 | Homes/Work for Change |
| PRC07 | Kellogg's (UK) ltd |
| PRC08 | Manchester Professional Services ltd |

There are three questions that need immediate answers regarding these social surveys: First, how were the above listed organisations identified? Second, how were the respondents to the questionnaire identified? Third, to what use was the collated information used in the analysis and the achievement of objectives?

**Sampling**

The first task was to identify the agents of regeneration as per the definition ascribed to the term in table 5.5 below. The ultimate aim was to net every possible participant organisation in the regeneration process of Hulme at the time of the surveys. This was achieved by the use of a snowballing technique – whereby a small group of already known agents was used to identify other agents in the network, and those other agents were equally asked to name other agents that they related with, and so on until no more new agents were forthcoming. The whole process started with a visit to the Moss Side and Hulme Partnership, which visit coincided with a regeneration partnership meeting, whose agenda is in appendix 7. A position paper presentation was also made to the team members of the regeneration partnership with the aim of introducing the research and the researcher. However, apart from the issue of introduction, the visit and the presentation also had the benevolent effect of providing the initial team of agents that was used to kick-off the snowballing process as well as providing respondents to the pilot survey questionnaire. Through snowballing outward, a total number of 62 agents were identified as the participants in the regeneration of Hulme at the time of the surveys in 2002. Together with the agents netted through archival records for the period 1990 - 2000, these were arranged as in appendix 3 for coding purposes.

**Identification of respondents**

There were a variety of mechanisms that were used to identify the respondents to the questionnaires within the netted organisations. Four of these avenues merit explicit citation here. The first was through the snowballing technique itself in which the initial respondents were also probed for the suitable respondents to the questionnaire within the organisations that they selected. These were normally the group leaders themselves. This did not only prove to be a useful technique in the whole exercise but also pointed to the strength of the social relations that existed among the organisations. The second was a spill over effect from the 1990 - 2000 archival record gathering aimed at netting the agents of regeneration over this period. Through the various records such as the minutes of meetings, it was possible to use the attendance lists to identify potential respondents to the questionnaires. Upon being contacted for participation in the exercise, if these individuals did not feel they were the right persons to attend to the questionnaire, they would normally redirect the researcher to the appropriate persons. The third avenue was through the websites that are maintained by some of the organisations. These normally had a number of contact persons for various tasks within their organisations. In the fourth strategy, the questionnaire was simply sent to the organisation's physical address or through an e-mail containing the link to the online version of the questionnaire. In both of these cases, an introductory letter was enclosed/attached to allow the reception personnel to direct the questionnaire to the appropriate person within the organisation. The result of this flexible exercise was a good response rate to the questionnaire. A total of 57 questionnaires were issued, 22 of which were Internet based. Five organisations could not be located in terms of their physical or website address, despite having been identified by other organisations as "agents" of regeneration. Out of the 57 questionnaires issued, 49 (79%) were received, with 95% response rate from those issued online. 2 questionnaires were annulled for reasons of inconsistency in the response, thereby effectively reducing the total response rate to 48 (77%).

**Analysis of the results of the social surveys**

The data that was collected from the social surveys was qualitatively and quantitatively analysed at three levels. The first one was to facilitate social network analysis, especially for those parameters that were ascribable to the individual members (agents) of the network structure. It was therefore possible to deduce collaborative tendencies among organisations (using clique analysis), the amount of power wielded by individual agents (using degree centralities), and the ability of individual agents to play an intermediary role in the network (using betweenness centralities). The second level was an analysis of the enabling environment for the evolution of social networks of regeneration, in which the respondents to the questionnaire were asked to give an account of their organisations in terms of their origins (factors of group formation) and their reasons to operate in Hulme (factors of group location). The third level was a top-up to the interviews held with three residents who had lived in Hulme long enough to witness the diversity of change in the area. Here, the respondents to the questionnaire were asked to give an account of their experiences and perceptions of change in Hulme, regardless of how long they had been in the area. This part of the analysis also provided a "backup" framework to the scanty statistical account of the deprivation landscape of Hulme between 1990 and 2000 (see section 7.4.1 of chapter 7).

As the gathering of the data took pace, it became evident that some of the organisations did not have a lasting relationship with Hulme, and therefore did not contribute much to the social capital in the area. A definition of an "agent" was inevitable in order to guide the process of netting the participants in the regeneration of Hulme. Table 5.5 summarises the operational definitions that were used in the study, especially after the pilot surveys.

| Table 5.5 Definitions of agents in the regeneration of Hulme | |
|---|---|
| **Term/Abbreviation** | **Operational Definition** |
| Agent | For the purpose of the study, an organisation was considered as an agent of regeneration if, based on available records, that organisation attended at least three meetings or events on the welfare of Hulme in any one particular year. Whilst acknowledging the contribution that "one-off" attendants at meetings may bring to the regeneration of Hulme, it was felt necessary to put this lower limit in order to identify the real committed agents in the regeneration processes. |
| COM | The acronym stands for "community organisation". Because the definition between community and voluntary sector organisations is equivocal, the term community was used in the study to refer to both types of organisations. |
| PRC | PRC stands for Private Companies or Corporations. These were mainly profit seeking entities, although some of them sometimes tended to hide behind the veneer of altruism. |
| GOV | This refers to both central and local government departments which attended regeneration meetings in Hulme. It excluded formal central/local authority officer meetings where Hulme was simply an item on the agenda. This category also excluded quasi-non governmental organisations. |
| OTH | OTH stands for "other". These are organisations that did not fall in any of the above categories. The most prominent organisations in this category were Housing Associations and Primary/Secondary Schools. |
| MCC | The acronym stands for Manchester City Council. Although there were numerous departments of Manchester City council that were involved in the regeneration of Hulme, for the purpose of the study, MCC refers to the Voluntary sector Support Office of the Council's Chief Executive Office Department. |

Through snowballing outward, a total number of 62 agents were identified as the participants in the regeneration of Hulme at the time of the surveys in 2002. Together with the agents netted through archival records for the period 1990-2000, these were arranged in alphabetical order as in appendix 3 for coding purposes.

## 5.7 Summary

The problem of finding a unified body of methodology for complexity theory has been highlighted by researchers who have sought recourse to this emerging field of study. Consequently, the gateway has quite often been the unavoidable practice of borrowing methodological techniques from other disciplines that are perceived as approximating the concerns of complexity research. It is in this light that the current study sought refuge in the complexity-compliant tools of social network analysis. In the pursuit of the research aim and objectives, the study employed a case study approach in which the regeneration of a once highly deprived inner city area of Hulme in Manchester was the focus of attention. The analysis took the form of a combination of a historical analysis, social network analysis, and analysis of the results of social survey data so as to unearth any complexity tendencies, thus providing a springboard upon which to address the concerns of the research.

CHAPTER ONE

CHAPTER TWO

CHAPTER THREE

CHAPTER FOUR

CHAPTER FIVE

# CHAPTER SIX
## From Prize-winners to Architects of a Disaster: Lessons from Hulme

CHAPTER SEVEN

CHAPTER EIGHT

# CHAPTER 6: FROM PRIZE WINNERS TO ARCHITECTS OF A DISASTER: LESSONS FROM HULME

> "It is not necessary to go as far as South Africa to observe the reality of second class citizenship. Deprived families, herded together, are to be seen in every major British inner city. Manchester's Hulme bears all the sociological characteristics of a Bantustan Reservation" (Paul Hanon, 1977)

## 6.1 Introduction

The above quote is a description of the inner city area of Hulme, Manchester, in the late 1970s, and is a view that remained valid till about the dawn of the 1990s. And yet today, the people of Hulme can boast of a new Hulme, new housing and a host of community groups and resource centres. Today, it is not uncommon to come across captions like "Reasons to be Cheerful in Hulme"[1]. All this is because Hulme has moved from the rank of worst slum in Manchester to that of being one of the best examples of regeneration in Britain. More important than mere praise, here, is a critical understanding of the roadmap to this achievement of unparalleled magnitude. What was the nature of the path to the success story of Hulme and to whom (or to what) does credit go? The sixth chapter attempts to address this question by virtually placing the evolution of Hulme regeneration processes on the weighing scales of complexity theory. This is achieved by the use of a historical narrative approach on the evolution of Hulme regeneration processes, focussing mainly on the activities of 1960 to 1990. This should provide the basis for the analysis of the first of the three research objectives in the next chapter. The chapter starts with an introduction to the inner city area of Hulme and the city of Manchester in which Hulme is situated.

## 6.2 Manchester's industrial legacy

Manchester is one of the largest cities in Britain, supporting a population of 392,819 (ONS, 2001). The city is suitably located in the old county of Lancashire on the side of the Pennine Mountains. According to the Papillon Graphics Encyclopaedia of Greater Manchester, it was in Manchester that the

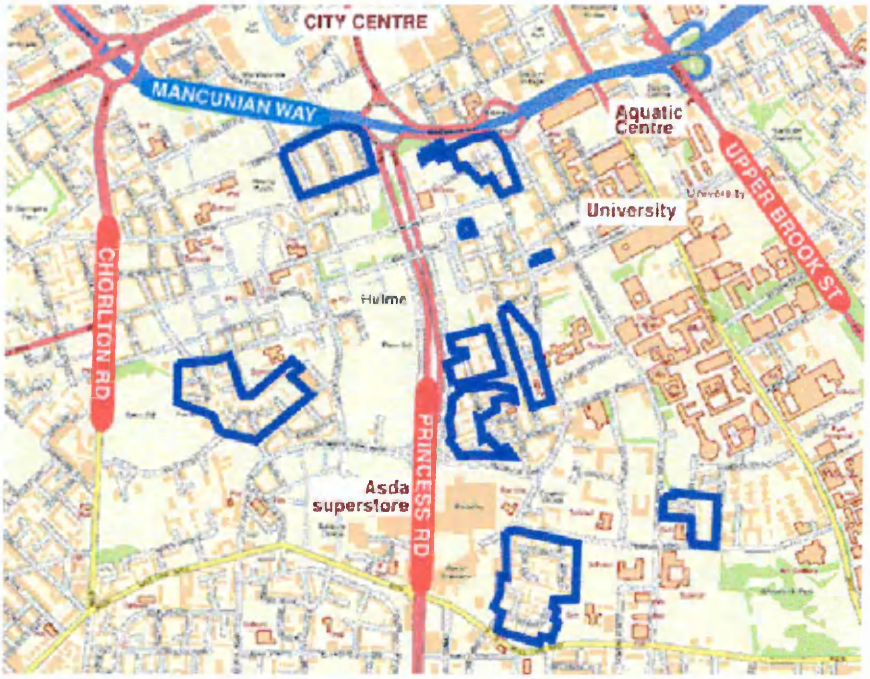
[1] At the time of the research, this was a familiar caption on public notice boards in many of Hulme's resource centres.

modern world was founded through a combination of factors, including, industry, early development of merchant skills, the coincidence of climatic and natural resource favouritism, the inventiveness of its own people, and the powerful entrepreneurial spirit that has characterised the region for many years (Society Guardian, URL, 2003). Although Manchester has been inhabited for more than two millennia, it was not until the 18$^{th}$ century that it became the centrepiece of world attention by emerging as the first industrial city. During the Industrial Revolution, the city saw the growth of factories manufacturing merchandise for the textile industry, and became the prime region for this industry until the 1950s when cheaper imported goods signed the death warrant for the region's pre-eminence. Apart from that, the harsh reality is that there was also a heavy price to pay for Manchester's maiden entry into the industrial zone, in that the city became famous for its working class slums. The inner city area of Hulme was one of the worst of such slums, exhibiting all manner of social and physical decay encoded in the preamble above. How and why Hulme acquired this kind of notoriety is a question that can best be approached from a historical account, but first a brief locational description of the area is necessary.

## 6.3 Location of Hulme in Manchester

The inner city ward of Hulme derives its name from the Danish word meaning low-lying, flat land, often comprising very damp meadows and grasslands (Makepeace, 1995). This is because Hulme is surrounded by water bodies on three sides, namely, the River Irwell, the Medlock and the Cornbrook. Apart from these natural (and historical) boundaries, Hulme is an area situated immediately south of Manchester city centre and is sandwiched between Upper Brook street in the east and the Manchester Ship canal in the west. Its northern boundary is defined by the Manchunian Way, while at the southern boundary is its neighbouring ward, Moss Side. The area is also suitably located in close proximity with the education precinct of Manchester University, and Manchester Metropolitan University. The map below (fig. 6.1) shows the location of Hulme south of Manchester city centre.

**Fig. 6.1 Location map of Hulme - Manchester**



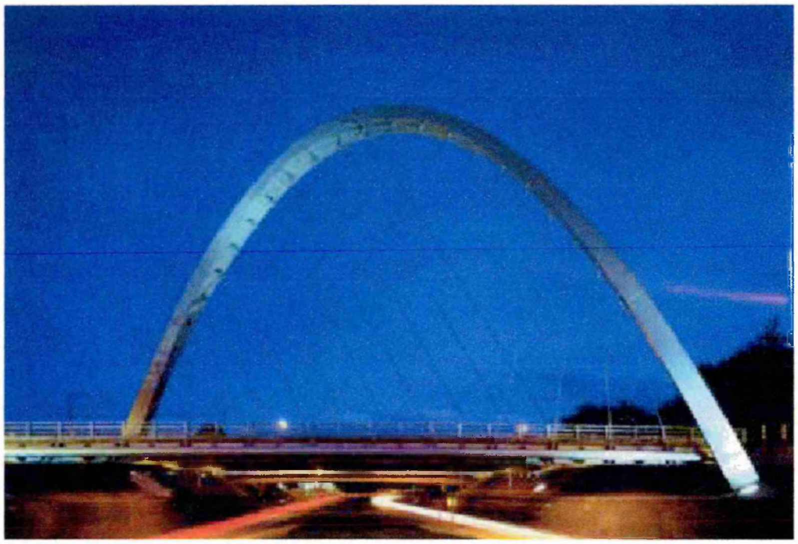


The blue line indicates areas with council housing

Manchester Home Finders, 2003

Following the opening of the award-winning Hulme Arch bridge (fig 6.2) in 1997, Stretford road completed the strategic east-west route linking the higher education area and the Science Park communalities with Trafford Park and the Salford Quays, to form a development axis running through the heart of Hulme (MSHP, 2003). The area enjoys the economies of proximity to the city centre apart from having an excellent access to Manchester International Airport and the extensive motorway network through Princess Road.

**Fig. 6.2 The Hulme Arch Bridge**



Source: University of Manchester electronic photo gallery, visited in 2003

The area supports a population of well over 9,646, a far cry from the late 1800s figure of 100,000. A critical analysis of the drivers of change in the evolution of Hulme should reveal the factors behind this drastic fall in the area's population. As with the wider context of Manchester, the starting point is the Industrial Revolution.

## 6.4 Industrial age Hulme

Prior to the onset of the Industrial Revolution, Hulme was predominantly an agricultural area. It was not until 1764 that the agricultural pre-occupation of the area began to fade following the completion of the Bridgewater canal through to Manchester (Makepeace, 1995). The new waterway brought with it a fresh injection of development to the south-western peripheral areas of the city, as wharves and warehouses clustered around the canal terminus. The new structures were erected in a haphazard pattern and had no regard for municipal boundaries. For instance, the River Medlock almost disappeared as its course was built over.

The canal development had a profound effect on the growth of Hulme, such that by 1801, Hulme was the second largest township (after Adwick) around Manchester with a population of 1677 (ibid). The population later grew rapidly, particularly, between 1831 and 1874 when it galloped from 9,624 to 74,731 under the exigencies of the Industrial Revolution, before beginning to decline, falling to 66,916 in 1901. Ironically, much of the industrial activity in 19th century Hulme was on a small scale, often in workshops, while large firms were located in outlying areas. It was in Hulme that the first Rolls Royce motorcar company emerged in 1904, the outcome of a meeting between Henry Rolls and Charles Royce at the Midland Hotel in Manchester (ibid). Industrial activity based in Hulme, can therefore, not be said to have been the main source of population growth in the area around this time. Rather the more plausible source was from migrants to Manchester who continued to vote with their feet to the entire city in response to the magnetic effect of the Industrial Revolution. Out of this kind of socio-economic environment, Hulme grew up very rapidly in the mid 19th century to accommodate Manchester's increasing population (HRL, 1994). The area developed haphazardly as an area of tightly packed terraces and courts, providing cramped and often unsanitary accommodation from migrants coming to Manchester city. Some houses had no toilets of their own while many others had no foundations and were laid on bare earth (HMSO, 1995). As a result of these squalid conditions, Hulme was soon branded one of Manchester's worst slums, occasionally ravaged by outbreaks of cholera and other diseases associated with unsanitary conditions. The Sunday Chronicle made the following comment about Hulme in 1889:

> "The streets are dim with smoke and the floors of the passages and the carvels are positively reeking under the hot sun. Stagnant water, rotten vegetables and liquid filth lie amongst the stones, the ash boxes are overfull, the atmosphere is thick and, the stench is overpowering (SC/26/05/1889)

Despite the dim picture painted above, industrial age Hulme was an important inner city area, close to the major areas of employment. The area also had a wide range of facilities associated with major residential neighbourhoods, including shops, churches, pubs and even its own town hall. Its high street, Stretford Road, was one of Manchester's important shopping streets (HMSO, 1995).

However, today, the Hulme of the 19th century is none existent. The old buildings of Hulme have been demolished and replaced by modern (predominantly residential) buildings. There is one thing about Hulme, though, that is analogous to a mathematical constant, as it has stood the test of time. It is the community spirit of the Hulme residents, which the people themselves have always boasted about. This is exactly what was gathered from the interviews conducted with some of the people who have lived in Hulme long enough to see the changes take place. All, but one of the five interviewees had one common message - that the community spirit of Hulme has remained intact despite the odds of having to face numerous upheavals in the form of displacements induced by slum clearance and redevelopment programmes initiated by the central and local government. Theirs (interviewees) is a depiction of the spirit of Hulme as it was in the 1960s and 1970s. Prior to that period, there is evidence to suggest that the same kind of social cohesion existed even as early as the 19th century. For example, Engels described the area in the 1930s as "*one great working people's district*" (quoted in Walsh, 1993). For many years and since the diagnosis of the Hulme problem, numerous attempts have been made by the central and local governments to ensure Hulme becomes a liveable place. Like in other British inner city areas, efforts to correct the urban problem in Hulme began with the physical approach.

## 6.5 The dawn of the physical approach to regeneration

The origins of Britain's urban problem will never rest anywhere else other than at the feet of the Industrial Revolution, such that this writer is not deterred from replicating this argument several times. Wherever industrial activity took place, housing provision became incidental to that industry. The response by property development speculators was to haphazardly construct living quarters for the workforce, taking care that they incurred the barest minimum of costs and used minimal space. This kind of house building continued until the passing of the 1919 Housing Act, which charged local authorities with the responsibility of providing affordable housing to their residents (HMSO, 1995). The enactment of this legislation was nowhere near to government's altruistic concerns about the plight of the working class. It was the power of local residents themselves (through a series of rent strikes) that compelled the government to take an active role in the provision of social services, rather than leaving things on the chaotic side of profit-oriented speculators.

As a matter of response to the 1919 Housing Act, Manchester City Council established the Manchester Corporation, which was immediately tasked to build 17,000 homes (HRL, 1994). However, due to resource constraints, caused largely by the effect of the war, the corporation only managed to build a quarter of this target by the mid 1920s. Subsequent legislation, particularly the Housing Act 1930, empowered the city council to identify and demolish any houses that were considered unfit for human habitation. Following these powers, the City Council Medical Officer condemned most of the housing units in Hulme as unsuitable for human occupation, and in fact most of the houses were already 100 years old. By 1923, at a time when the city's average population density was 34 residents per acre, the figure for Hulme was 136, rising to 196 nearer to the city centre (ibid*)*. Even by the 1930s, with a population of 130,000, and its own MP, Hulme was still described by the Manchester Guardian as the city's worst slum. The problems persisted so much that in 1934, Hulme was declared a slum clearance area, Britain's largest (ibid). Consequently, in the same decade the council started to tackle some of the area's worst physical problems through slum clearance.

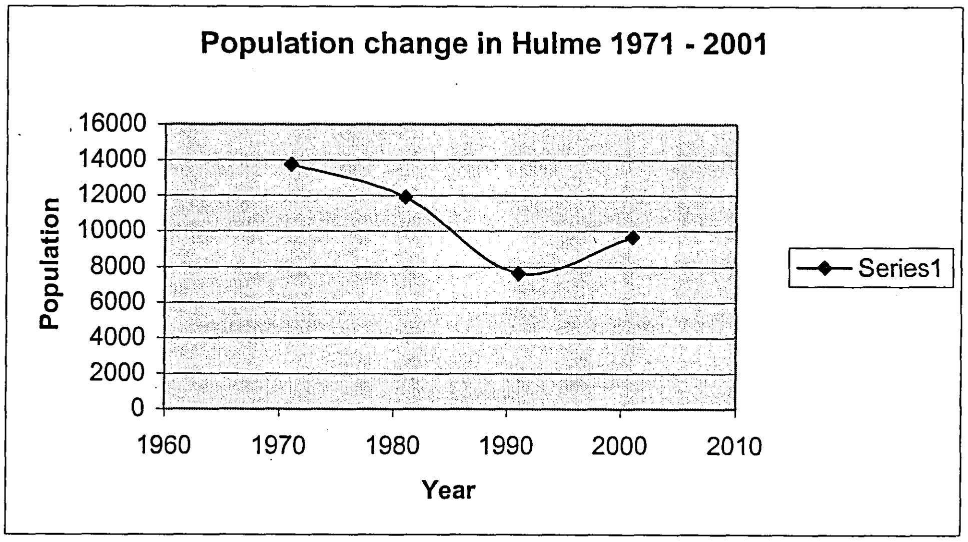
Embarking on slum clearance in Hulme was not an easy task on the part of the city council and the Corporation. The first problem was the shortage of space for re-housing displaced residents. There was very little land in the inner city upon which to erect traditional terrace houses (HRL, 1995). In view of this, the city council was compelled to consider new techniques of house building, such as apartment blocks. The second and perhaps biggest problem facing the council and the corporation at this time came in the form of resistance from local residents who did not want to be re-housed elsewhere to pave way for slum clearance. For example, in 1933 when the council made a proposal to construct 874 re-housing units in the Wythenshawe area, many of the people were reluctant to move out of Hulme despite the poor housing conditions they were living in. They had lived in Hulme for many years and had enmeshed themselves into large support networks of family and friends.

The climax of the Hulme residents' resistance was on 29 July 1933 when around a thousand ratepayers from Hulme staged a protest march to the town hall against the redevelopment proposals (ibid). Later on, other stakeholders, such as private traders joined the protests, though theirs was more a fear of losing business during the relocation process, than sentimental attachment to Hulme. The traders staged the second protest march in 1937, after the council declared that it was going to demolish the houses in the St. George's area of Hulme (ibid). In effect, the people of Hulme were not opposed to the council's building of new houses. What they wanted was the council to build the new houses and flats on greenfield sites within Hulme, rather than displacing them. But the city council felt that the cost of land (£6,000 per acre) was on the high side and, therefore, decided to proceed with further demolition and leave the greenfield sites of Hulme for industrial development. Further protests by residents compelled the Housing Director of the city council to submit to their demands by acknowledging that the Wythenshawe Housing Project may have to be slowed down or stopped altogether due to the unwillingness of families to move into the new housing units. Eventually, the council agreed in 1938, to redevelop Hulme as a housing estate, utilising mostly empty sites although land values had by then risen to £7,000 per acre (Walsh, 1993). The redevelopment was planned in four phases as follows (ibid):

- Construction of 114 flats at Chester Road, Lloyds Queens and Hargreaves streets at a cost of £21,700.
- Construction of 254 flats at City Road, Lloyd Street and Lower Moss Lane at a cost of £41,300
- Construction of 154 flats in St. George's Park
- Construction of 56 flats at City Road and Lord Street

These well-intentioned proposals were mystified by the outbreak of the Second World War in 1939. The onset of the war meant that apart from isolated house building projects, activities virtually came to a halt, such that any constructive ideas about the slum of Hulme were buried and only resurrected in the late 1950s and early 1960s. There were pockets of council house building in the area, most notably, the Bentley House Estate constructed in the 1940s (HRL, 1994). Many residents were displaced in the wake of these slum clearance programmes and most of them were moved to the city's first suburban council housing estates. This heralded a further process of population decline in Hulme, which continued well into the 1990s as may be deduced from figure 6.3 below.

**Figure 6.3 Population movements in Hulme 1971 - 2001**




Source: Office for National Statistics, 2003

After the end of the Second World War, with a steady shift in council policies towards inner city policies, firm ideas for a new Hulme were developed. However, it was not until the new ideas were backed by government funding for public housing that a new Hulme became possible. In general, the new ideas were translated into reality in three decades after the Second World War (EIUA, 1997). In the 1940s and 1950s, the slum clearance programme accelerated and a number of traditional brick-built flats were erected, notably in St. George's area. By the late 1950s the first of Hulme's high-rise blocks had been built in an exercise that served as one of the earliest experiments with new traditional housing and construction methods. Ten more high-rise blocks followed though at a slower pace than the former.

Stretford Road, with its largest range of shops outside the city centre, continued to provide a hive of activity through the centre of Hulme. An important feature of post-war Hulme was the continuation of a rich mixture of businesses and trades, ranging from the Dunlop rubber factory, Gaythorn Gas works to smaller specialised industries like gold-beating and sign-writing (HRL, 1994). The relocation or closure of these traditional industries and centres of commerce had a very devastating effect on Hulme. The Hulme Hippodrome, once a thriving variety theatre, was converted to a Bingo Hall as audiences dwindled in the 1960s. As Stretford Road closed in 1965, plans for redevelopment were still being drawn up based on the newly found exciting ideas of the time. It is no wonder that Hulme residents believe that in the 1960s, their area underwent some of the most shattering changes a community could ever have imposed upon it, and from which it was still struggling to recover by 1990 (Hulme Views Project, 1990). Like in other British inner city areas, the period after 1960 was the most radical in urban regeneration circles.

## 6.6 Evolution of Hulme regeneration: 1960-1990

In 1960, an estimated 128,000 dwellings, accounting for 15% of the unfit housing units, in England and Wales were located in Manchester area, with 68,000 of them being in the inner city areas (HMSO, 1995). The problems of the 1930s, as fuelled by the Second World War, were simply a carried forward situation. At this time, Hulme was a grim 350 acres of brick and tarmac, still characterised by a critical shortage of housing. The 100 year old houses of the 1930s were now an extra 30 years old, such that if they were not pulled down, they were certainly most likely to fall apart on their own. Consequently, the council came under increased pressure of a two-dimensional nature. The national government, on one hand, wanted to reduce public housing shortages quickly but at the lowest possible cost. On the other hand big construction firms were yearning to secure contracts for new experimental forms of housing

(EIUA, 1997). The response of the council to these pressures heralded the development of system-built deck access housing that replaced the old traditional brick built flats.

Despite the grim picture stigmatising Hulme, many residents still retained their sentimental attachment to the area. They had a sense of identity and belonging to the community. It was imperative, therefore, that the proposed new Hulme redevelopment programme took into account this sociological dimension of the Hulme community in its quest for a solution. Unfortunately, this appears to have been overlooked or ignored by the redevelopment team, and the effect of this negligence was far reaching, as the succeeding discussion demonstrates. There were a few other things surrounding the redevelopment of Hulme at this time, which somewhat guaranteed that there was little or no such community resistance to the re-housing programme as was experienced in the 1930s (ibid). First, much of Hulme was already in a state of physical decay as most of the dwellings had fallen apart. Secondly, the population of Hulme had drastically shrunk, down to 28,000, from the nearly 100,000 reached in the 19$^{th}$ century. This meant that space for displaced families would not be so much of a problem, and for sure the city council managed to secure homes for 10,000 residents on the new housing estate of Hattershey. This enabled the residents to reconnect their traditional social networks. These residents were given no guarantee that they could move back into Hulme when the new housing units were ready, though many of them found their way back into the area to join tenants displaced from elsewhere and newly formed households. Those who returned to Hulme, together with the remnants of the area re-established contact with the familiar landmarks of the Hulme community spirit, except that this community was now living mostly in the new high-rise deck access blocks of flats as opposed to traditional terraced houses.

### 6.6.1 The rise of deck-access housing

By the early 1960s, all remaining terraced houses in Hulme were demolished in a slum clearance programme that spared only a few buildings (HMSO, 1995). The design philosophy of the time was for a new Hulme planned around the rigid segregation of vehicles and pedestrians. Tenants were to be accommodated in flats and maisonettes on interlocking decks where it was assumed that traditional street life would be replicated far above the hazards of traffic. Shopping facilities were to be confined to the three areas of the Moss Side district centre and the two traditional neighbourhood shopping centres along Alexandra Road and Princess Road. The crowning piece of the redevelopments was on the four huge crescent blocks, which took as their inspiration the Georgian terraces of Bloomsbury and Bath. These were five-storey deck access blocks each a quarter a mile long, and together having a capacity of 1000 homes (EIUA, 1997). They consisted of 2 and 3 bed roomed flats, and 1 bed roomed maisonettes, which were all connected by large access decks. There were no ground level flats as the space there was designed for garages and shops. Lifts were provided to service the height of the deck-access blocks, especially to cater for the disabled and the elderly. Each of the crescents was also designed in such a way that all the flats faced a large open public garden and away from the roads. Pedestrian crossings were situated to ensure easy access to shopping facilities, public houses, community resource centres, and the library, without having to cross any of the busy roads. In pronouncing their success in replicating Bloomsbury and Bath, the consultants Wilson and Womersley boasted as follows:

> "By the use of similar shapes and proportions, large scale building groups and open spaces, and above all, by skilled landscaping and extensive tree planting, it is our endeavour at Hulme to achieve a solution to the twentieth century living which would be equivalent in quality to that reached for 18$^{th}$ century Bloomsbury and Bath" (Manchester Evening News, 22/05/65).

It is not the concern of this discussion to dwell on the atomistic details of the differences between 18$^{th}$ century Bloomsbury/Bath and 20$^{th}$ century Hulme crescents. It is assumed here that such minute details are in capable hands with urban designers, planners and architects alike. Available insightful comments, however, suggest that Messrs Wilson and Womersley were being a little too romantic by using Bloomsbury and Bath as a model for their solution to 1960s Hulme housing problem. The Georgian crescents of Bloomsbury and Bath accommodated fairly well-to-do families, and no family had neighbours above and below them. They actually quite often served as summer homes for the wealthy people (Walsh, 1993). But as already mentioned, the pre-occupation here is not on the dichotomy of the two sets of super blocks. The concern and primary challenge of the discussion rather centres on the procrastinations, in decision-making processes, that characterised the post-1960s Hulme. The four crescents of Hulme were named after the renowned British architects Charles Barry, William Kent, John Nash and Robert Adam, who designed them, and even won prizes for the achievement. They were marvellous structures: the pictures of them below (figure 6.4) can only serve to give the reader the vaguest idea of what they actually looked like.

**Fig 6.4 Pictures of the Hulme Crescents**

Source: Society Guardian, 2003

The redevelopment of Hulme was virtually complete by 1972. More than 5000 housing units had been built in less than eight years with 3,000 of them being deck access, making Hulme the biggest concentration of this type of housing in Britain (HMSO, 1995). The crescents did indeed become the pride of the new Hulme though not to the extent that the designers or the council had anticipated. The deck access blocks offered housing standards far much "better" than what the old Hulme had to offer. The new housing units were neat and well equipped. Everything was done and taken into account, perhaps except for one: no one thought of involving residents in the decision-making processes of the (proposed) redevelopment of Hulme (HPRC, 1977). The result can partially be discerned from the next sub-title.

### 6.6.2 The deck-access disaster

The honeymoon for the architects of the Hulme crescents (together with that of the city council and everyone concerned) was short lived. It was not long before the disadvantages of deck access housing overtook the advantages. As tenants moved in, problems began to surface almost immediately and at an exponential rate (HRL, 1993). Structural faults were spotted in some sections of the new buildings. Maintenance problems equally arose from poorly designed systems such as heating, ventilation, and waste disposal. There were also major difficulties with the upkeep of common areas such as lifts, walkways and entry areas. Many of these defects were translated into high occupation costs on the part of tenants. Expensive heating systems meant that many households, even with children, were disconnected due to non-payment of bills and had to rely on colour gas stoves and candle light instead (HMSO, 1995).

Apart from the problem of housing conditions, Hulme had acquired a reputation and its residents were stigmatised. There was a high concentration of poor people, the elderly and the disabled, ex-homeless, a high incidence of alcoholism and drug dependency. Many children left school without any proper qualifications. Truancy and vandalism were rife and went unchecked. At this time, and using Great Britain as the yard-stick, if you lived in Hulme, you were: seven times more likely to commit suicide; thirty-one times more likely to be the victim of crime; and forty-one times more likely to be actually murdered. (HPRC, 1977). The upper deck-access units of the crescents were particularly unsuitable for children. This became tragically evident when a child fell to his death from one of the crescents in 1974. The tragedy aroused the Hulme tradition of tenant activism, which was overwhelmingly directed at Manchester City Council. By 1975, the council had bowed to the pressure and opted to change the approach to housing allocations (HMSO, 1995). The crescents and the rest of Hulme were opened up as housing for single people, students and adult households on shared tenancies, while allowing families to move out. Apart from changing the council's allocations policy, problems with deck-access housing had two other side effects. First, the council's policies on housing construction and design were modified towards low-rise terraces with gardens. Secondly, the shift in allocations policy ignited an enormous change in Hulme's social mix. But, instead of being a solution to the problems of Hulme, the council's decision appears to have aggravated the situation. The deteriorating deck access stock was increasingly taken over by other tenants whose housing rights and choices, such as students, were extremely limited (EIUA, 1997). Some of the tenants, such as the homeless, mental health patients, alcoholics and drug addicts, were much more vulnerable than the elite with university degrees. For others, such as squatters, travellers, artists and musicians, Hulme was the right place to be as it was cheap and flexible enough to accommodate various lifestyles. A comprehensive study jointly conducted by Manchester City Council's Social Services and the Planning Departments in the late 1970s revealed that Hulme topped the list of areas of multiple deprivation out of 33 areas of Manchester city. Community facilities in Hulme were non-existent. Children under 16 shared two adventure play grounds. There was one old people's centre, but nothing at all for the intermediate ages. The relationship between the police and the youth of Hulme was that of antagonism. The police in the area were generally ineffective as 75% of crimes were committed above ground level on the decks. Whenever police did appear in the decks, they went there in threes and only to arrest someone (HPRC, 1977).

The crescents were also particularly hosts to a variety of unconventional creative and leisure activities in the mid 1980s. It was common knowledge that deck access housing had succeeded in creating a unique, diverse and underprivileged community. Each of the various interest groups had very different expectations, needs and attitudes towards life in Hulme. This combination of deplorable housing conditions and a diversity of social mix coincided with a period of enormous economic change in the early to mid 1980s, in which potential sources of employment for Hulme declined. Despite all this, the Hulme community has always boasted of great strengths and the caring and supportive approach of neighbours. Indeed:

> "there must be very few places in Britain where, against all odds, there is such a lively array of associations and clubs firmly based within their communities" (HMSO, 1990: 13).

In the 1980s, this community spirit found itself in the aggressive hands of the market-oriented Conservative government, thereby further alienating the chances of narrowing the central-cum local authorities and local communities gap in the decision-making processes.

### 6.6.3 The dilemma of the 1980s

By 1985, Manchester City Council was still at loss as to the best way of tackling the problem of Hulme. Tenant activism was also at its zenith, such that the possibility of a tenant and officer/councillor joint conference was receiving serious consideration. Two such conferences were later held on 22nd February 1985 and 16th November 1985. It was an unusual occasion that all the stake holders never considered would be a possibility as suggested by the words of one of the participants (quoted in the Hulme Conference Report of 22 February 1985):

> "We also took the unusual step of deciding to have a tenants conference, rather than one dominated by politicians and professionals" (John Nicholson, Chair of Housing, Manchester City Council, 1985).

After the two conferences, tenants looked forward to a period of real involvement in the decision-making processes of Hulme. However, the anticipated participation was soon disillusioned. The city council certainly consulted the tenants, but it would appear that the whole exercise was reduced to the level of merely listening and then going off to do what the council had intended to do in the first place (HPRC, 1985). The remainder of the 1980s were characterised by protracted debate about the future of Hulme, with a frustrating search for practical solutions to the many problems being made (EIUA, 1997). The key stakeholders in the debates and search for solutions were the city council, Hulme residents, the Government Office for the Northwest, and the Housing Corporation. Each of these bodies had their own interests to pursue and secure. The council was primarily interested in finding comprehensive solutions to the problems of deck-access housing and ensuring that Hulme became a good place to live in. The Government Office for the Northwest was set on seeing to it that Hulme benefited from whatever national government regeneration initiative came up. The Housing Corporation was keen to take part in the redevelopment of Hulme though it fell short of justifying a specific role for itself, basically for two reasons (ibid). First, the cost of a comprehensive redevelopment programme in Hulme was beyond the corporation's means. Second, there was no precedence for the corporation, and the Housing Associations it funded, involving themselves in the problems of local authority estates. Residents were divided in many issues regarding the way forward for Hulme, reflecting the multiplicity of interest groups. However, they seemed to have been united in their demands for three things (ibid):

- Although comprehensive redevelopment was necessary, it was argued that there was need to go beyond the physical approach so as to tackle economic and social problems as well.
- There was need to ensure that the redevelopment focussed on existing residents. The residents were convinced that they at least did not want a repeat of the 1960s programmes where local communities were disintegrated and scattered around Manchester. This also meant

empowering residents in the decision-making processes on matters that affected their living environment.

- Privatisation of tenure, a reminiscent characteristic of the 1980s, was not welcome. Residents wanted to remain council tenants and not to be left in the hands of a private landlord. It was for this reason that the decision to declare Hulme a Housing Action Trust (see chapter four) in the late 1980s met with resistance from the residents.

Efforts at finding a practical solution that would satisfy all the interest groups proved futile. The nearest attempt came in the wake of the Hulme Study, a government funded partnership between the Department of Environment, Manchester City Council and the tenants of Hulme. The aim of the study was to produce plans which had the maximum chance of meeting the needs of existing tenants, of being acceptable to central and local government and of being resourced (HMSO, 1990). The Hulme Study was popular with tenants, who found it an important arrangement for raising their concerns, finding their way around the decision-making process and making influential contacts, especially in government and the media. The study also failed to come up with practical, costed proposals, but the search for solution surged on.

### 6.6.4 Consensus at the dawn of the 1990s

The debate about the future of Hulme continued into the 1990s though it seemed that all parties would have to settle for a series of adhoc housing improvements rather than the comprehensive programme of physical, economic and social regeneration (EIUA, 1997). Manchester City Council was able to secure £7 million from the central government for Housing Investment Programme and Estates Action funding for housing improvements. A breakthrough came in the wake of a consultancy study early in 1991 from which it was realised that the best approach to the problems of the deck access stock was demolition rather than refurbishment. Recall that this was exactly what the community groups had always advocated for since the late 1970s. An agreement was reached between the government, the council and the Housing Corporation that the poorest quality and most under-occupied decks in some parts of Hulme would be demolished and replaced with new Housing Association homes. The Housing Corporation established a special consortium of Housing Associations to be given the task of building and managing the new housing stock. Tenants also became actively involved in the programme as overseers and through plans for them to form a community-based housing association to manage the new housing units. It was at this rather *innovative stage* that the government announced the City Challenge programmes.

### 6.6.5 Hulme City Challenge

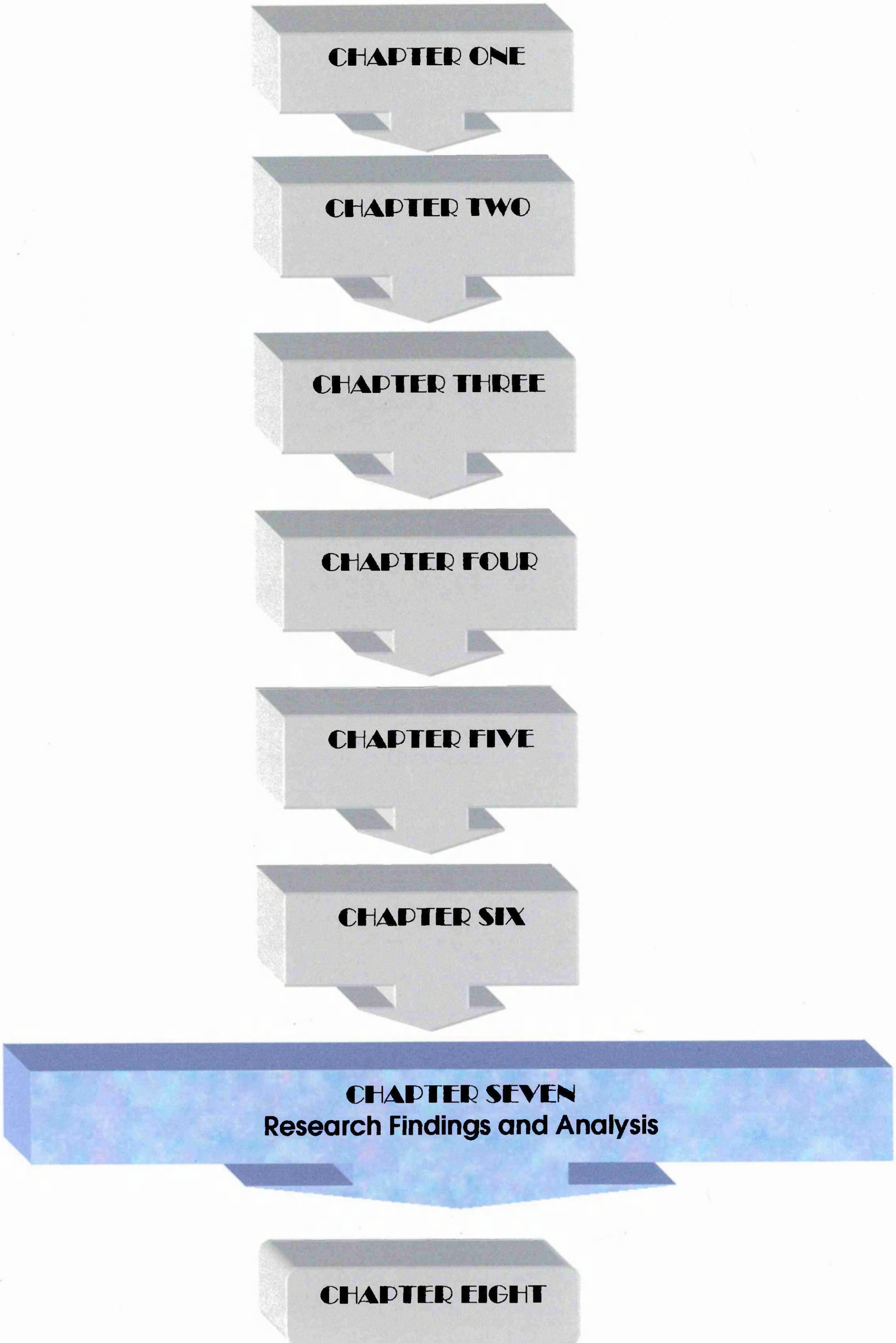
The Hulme City Challenge was launched in April 1992 with the help of £37.5 million-government money. This funding acted as a catalyst for a comprehensive programme of initiatives to tackle economic, social and physical problems based on a partnership between the public, private, voluntary sector, and the local community groups. Holism was at the centre of the City Challenge approach. It was recognised that *no single organisation has a monopoly of knowledge about, or resources to deal with, complex urban problems* (EIUA, 1997). Therefore, programmes needed to be drawn on the basis of the expertise, energies and resources of local authorities, government, other public agencies, the private sector, voluntary groups and local residents. The objectives of Hulme City Challenge reflected seven themes, that include local economy, employment, housing conditions and choices, the physical environment, social fabric and management of the programme (ibid):

A plethora of initiatives were set up to achieve these objectives. Hulme Regeneration Limited (HRL) was set up by Manchester City Council and AMEC Plc as a joint venture to co-ordinate and manage a complex of these new initiatives (MCC, 1997). Plans were drawn up to build 3,000 housing units as well as new shops, roads, offices and community facilities. The overall approach reflected a deliberate departure from the traditional land use zoning to that of achieving a close integration of economic and social activities. Hulme Community Homes Limited (HCML) a community-based forum was set up. The forum re-established the linkage with the local community to formulate social housing policies for the proposed redevelopments. A Hulme Tenants

Participation Project (HTPP) established earlier in 1988 would work alongside the HCHL. The HTPP was the first funded agency to work specifically for, and with the tenants of Hulme and to liaise between the institutional stakeholders and tenants. The initiative was funded jointly by the Housing Corporation and the City Council, the latter through City Challenge. The Moss Side and Hulme Business Federation was also set up in 1994 by local businesspersons in conjunction with Manchester Chamber of Commerce and Industry (ibid). Its main aim was to assist local businesses, especially those with 25 or fewer employees, to have equal opportunities to compete effectively in local, regional, national and international markets. Out of this rich mixture of multiple agent involvement in the regeneration processes, emerged one of the best examples of regeneration in Britain in the 1990s. Though many writers have attributed the successes of Hulme regeneration solely to the City Challenge programme, the conclusion in this study is different.

## 6.7 Conclusion

The regeneration of the inner city area of Hulme in the post-war years fits well with the overall evolution of urban regeneration initiatives in Britain. The existence of emergent properties in the regeneration of Hulme is discernible from the decision-making processes, which suggest a general movement from a highly centrally-controlled regime to a more eclectic system of the late 1980s and early 1990s. Hulme can, therefore, be envisaged as a complex self-organising system that had become bound or frozen by many years of central control with community networks working hard to break the mould and eventually dragged the whole system to a consensual nexus (the edge of chaos?). Like in the wider context of Britain's urban regeneration (chapter four), this conclusion (though tempting) is only provisional and will be subjected to more rigorous analysis in the next chapter. Thus, the hive of activity and connectivity that ensued from the point of consensus is a subject of discussion in chapter seven, where the emergent social capital is analysed in complexity terms using (mainly) the tools of social network analysis.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# CHAPTER 7: RESEARCH FINDINGS AND ANALYSIS

## 7.1 Introduction

Having reviewed the literature and provided a methodological framework on the dual-faceted subject of complexity and urban regeneration in the previous chapters, the report now turns to an exposition of the findings of the research and their analysis. The presentation follows the sequence of the three research objectives with the first part (section 7.2) addressing the question of the implications of central control on decision-making in urban regeneration. Hinging heavily on the historical narrative of the regeneration of Hulme outlined in the previous chapter, this section tests for emergent properties within the decision-making processes. This is achieved by virtually placing the dynamics in the evolution of Hulme regeneration on the weighing scales (characteristics) of complex systems. Section 7.3 continues with the exploration of complexity as a potential basis for analysing urban regeneration by assessing the evolution of regeneration networks in Hulme between 1990 and 2000, and how this relates to the outcomes of the regeneration activities. The second research objective is thus spread across the two phases of sections 7.3 and 7.4. The first phase, section 7.3, consists of an organic analysis focussing on the structure of social networks. The second, section 7.4 is a functional analysis that tests for correlation between structure of the networks and the level of deprivation at different stages over the time period under consideration. Section 7.5 deals with the third and final part of the research objectives - an investigation into the structure of existing social networks in the regeneration of Hulme, with 2002 being the reference time. Under this objective, the research also attempts to investigate the auspicious conditions necessary for the emergence of community groups and the subsequent networks of urban regeneration. An in depth discussion and critical reflection on the findings follows in section 7.6 before concluding the chapter in section 7.7.

## 7.2 Implications of central control in decision-making processes

As indicated in the introduction above, this part of the chapter is centred on the historical analysis of the regeneration of Hulme in the previous chapter. The analysis primarily addresses the question of whether, and/ or the extent to which, urban regeneration processes can be conceptualised as complex self-organising systems. With regard to the specific question on the implications of central control on decision-making in urban regeneration processes, the major test criterion is the edge of chaos hypothesis, especially the NK landscape model suggested in chapter five. From this framework, it is a single step to the conclusion that "too much" of central control is undesirable for maximal innovation in urban regeneration processes, and neither is "too little" or indeed, the lack of it. The totality of the investigation is conducted within the framework of the four-question criteria outlined in chapter five, beginning with the attribute of multiple agent involvement.

### 7.2.1 Evidence of multiple-agent involvement

The view that urban regeneration processes involve multiple agents is an issue that does not need vigorous investigation, as it is now an approximate platitude. The notion of multiple agent involvement has been clearly spelled out in the definition of urban regeneration itself. In the regeneration of Hulme between 1960 and 1990, it has been suggested that, apart from Hulme, there must have been very few places in Britain where, against all odds, there was such a lively array of associations and clubs firmly based within their communities[1]. This is a direct reference to the existence of multiple agents in the regeneration processes. Evidence from the interviews conducted with some of the residents who lived or worked in Hulme during this period also suggests that there were numerous community groups that were involved in different ways in the welfare of the Hulme people. Chapter four equally paints a similar picture at the national level with evidence of a general movement (evolution) of decision-making mechanisms from authoritarianism to pluralism over the last half of the 20th

[1] This was an assertion made by the people of Hulme in a study called the Hulme Views Project, 1990

century. The multiple agents in both cases (Hulme and the national level) range from the smallest informal community/voluntary groups to more formal organisations like Housing Associations, private companies, and various local and central government departments. This leaves us with the obvious conclusion that urban regeneration processes involve a multiplicity of agents. But this alone is no more sufficient to constitute a complex system than a heap of sand. There is a need to check for interactivity among the multiplicity of agents.

### 7.2.2 Evidence of interaction among the agents

The agents of regeneration were not passive but actively engaged in some form of interactions. The regeneration of Hulme (1960-1990) revealed a multifarious array of stakeholders who were involved at different stages, in various scales and in different ways. For example, during the 1960s, chapter six indicates that Manchester City Council came under increasing pressure from the central government that wanted a quick and cheap reduction in the housing shortage, not only in Hulme but also in the entire city. The other source of pressure came from big construction firms whose desire was to carve out housing construction contracts. The residents who were subjected to constant displacements during the redevelopments were equally not idle and had their own voice, which was channelled through a horde of community groups. These primarily existed for a diversity of interests and goals but in the end they unconsciously organised themselves into complex patterns that shaped the resultant urban regeneration successes of the early to mid 1990s. This aspect of interactivity among the agents of regeneration is equally evident at the national level as may be deduced from chapter six where the notion of urban regeneration partnerships is a prominent feature. The new planning system itself (2004), as a response to the unyielding dictums of the urban system, now attaches great importance to the issue of local community participation in decision-making processes.

In order to amount to a complex system, the interactions within a system must also be in such a way that any constituent element stands a chance of influencing, and being influenced by, quite a few other agents in line with the dictations of chaos theory (Cilliers, 1998). Since the 1960s, and up until the late 1980s, there was little room for community participation in the regeneration processes of Hulme. It was generally held, and accepted, that tenants of Hulme were at the receiving end such that decisions about Hulme could only be made by the city council officers for the people of Hulme. The attitude of the city council was like: "*well, we are giving them home, why are they complaining*" *(HPRC, 1977)*. However, this traditional view was virtually turned upside down when the same "small" voices of the community began to creep into the decision-making mechanism and even substantially altering the final courses of action. Was it not the community spirit of Hulme that substantially altered Manchester City Council's housing allocation policy following the tragic death of a child who fell from a top floor flat in 1974? Such spirit of community activism is not transcendentally designed and can only arise from groups and individuals that have a history, are informally co-ordinated and can influence each other through their numerous acts of interaction. If there is any discernible pattern of cohesion, it owes its origin to this diversity of agent involvement and their interactions, rather than from any one particular agent or group of agents, or even external central control.

### 7.2.3 System dynamics and unpredictability

The element of non-linearity in urban regeneration decision-making processes comes from the very multiplicity of agents involved. The interests and aspirations of these different groups keep changing overtime, thereby causing general unpredictable events in the system as a whole. The redevelopment of Hulme that saw the erection of deck access housing was seen by Manchester City Council as the answer to Hulme's housing problem. The architects who designed the centrepiece of the redevelopment, the Hulme Crescents, even won prizes for their designs. However, their predictions were to be proved wrong a few years later when the redevelopments were to be totally rejected by the residents. The redevelopments, together with the social and physical mayhem that they harboured later came to be known as the "deck access disaster" before being demolished to pave way for a "redevelopment of redevelopment" in Hulme – essentially a third generation of development on the same pieces of land. At the height of the deck access-housing crisis in Hulme, community groups were quick to conclude and declare that if they had been consulted in the design process, the problems of Hulme would have been avoided. This goes to show that the design of the physical environmental is not a separate entity from the associated social setting. Such systems are difficult to model, let alone understand. Because the physical environment does not exist independently of the social fabric, the dynamics in the social complexity must be carefully taken into account in the design of any urban regeneration processes. The second source of non-linearity and absence of equilibrium conditions is found in the attribute of the local interactions. The interactions are usually local in nature in that information is primarily received from immediate neighbours (other agents) and yet the eventual effects of such connectivity are global. That is basically the reason why it is extremely difficult to model such effects by any conventional means of reductionism.

Because of the local nature of the interactions, the individual agents may not be conscious about the exact manner in which they contribute to the global drivers of change in the system. This is neither necessary nor does it affect the evolutionary pattern of the global system. Most of the community groups are unaware that by virtue of their existence and interaction with other groups, they make a positive contribution to the social capital and in turn the welfare of Hulme as a whole. This was deduced from the researcher's interview with one of the community groups in Hulme. When the respondent was asked to give an account of their contribution to the welfare of Hulme, the response was that her organisation was not involved in any way in the regeneration processes of Hulme. Yet, this organisation was playing an important role in giving advice and support to victims of drugs in Hulme, which if traced through the locus of the multiplier effects (not a necessary undertaking though) would turn out to be vital contribution to the regeneration of the area. In any case, agents of a complex system need not necessarily be wary of the value of their connectedness to the whole system. However, the feedback that comes from the environment acts as the constant energy flow that keeps the system out of equilibrium. In 1985, following a series of protests by the people of Hulme, Manchester City Council, for the first time in years, publicly acknowledged that Hulme had become unmanageable[2] and that real solutions were needed. This realisation, together with a series of other forms of feedback processes, acted as a fresh consignment of energy to the community groups and was to be manifested in the complexity of community involvement, epitomised by their declaration in no uncertain terms that:

> "The days of us being victims of other people's plans are over...From now on...we will no longer have planning done for us. From now, we are taking a hand, in consultation with a council that will have to have the political will to recognise that we demand a future of our own designing" (Hulme Deck Access Disaster Conference Report, 22 February 1985)

The numerous voices from the local meetings of the community groups were aggregated into a single unified force that saw, among other achievements, the demolition of deck access housing and paved way for the creation of a new Hulme of the 1990s – one founded on consensus building (search for the edge of chaos) rather than rigid exercise of central authoritative powers.

### 7.2.4 Evolution and adaptation to the edge of chaos

The edge of chaos hypothesis can be conceptualised in relation to different kinds of situations where there is a possibility of a system existing in either the chaotic or ordered regime. In this study, the edge of chaos was tested in terms of the duality between the amount of central control (local and central government decisions) on one hand and the power of decisions made by local residents. The controversy that followed the completion of the 1960s redevelopments in Hulme seems to suggest a system that evolved to the edge of chaos in terms of decision-making processes. The following chronology of events and sentiments (Figure 7.1) from the two extremes of order (central control) and chaos (power of community groups) illustrates the picture.

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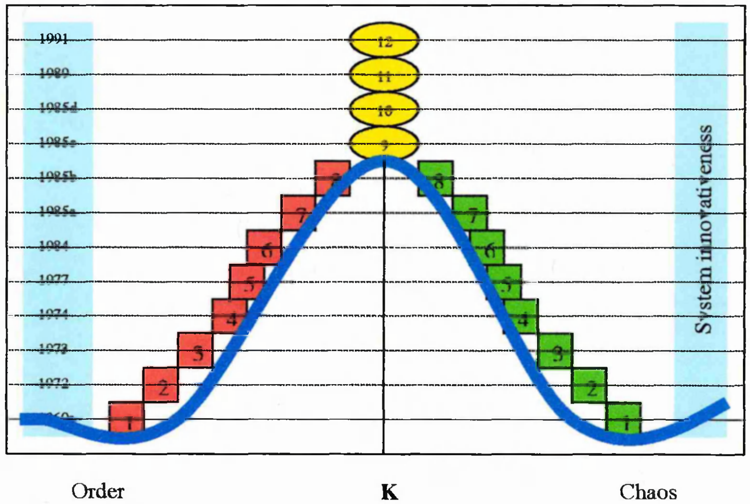
[2] This was reported by the Manchester evening News of 1 January 1989

**Fig 7.1 Evolution of Hulme regeneration to the edge of chaos**




The diagram is based on a pure intuitive assessment of the diminishing gap between local authorities and local communities in the decision-making processes. There are no known rational means of measuring such parameters of proximity. Thus, although the diagram shows a neat pattern, the eventual loci of ascension on the NK landscape should essentially describe a ragged topography. For example, after the much-appreciated two conferences between the council and residents in 1985, the residents of Hulme looked forward to a period of real involvement in the decision-making processes of Hulme. However, the anticipated participation was soon found wanting as the city council certainly did consult with the communities, but only to allow them (the council) to go off and do what the they had intended to do in the first place (HPRC, 1985). There is equally no guarantee of staying on the edge of chaos once the emergent processes have secured that place.

The key to an understanding of the above edge of chaos-seeking framework is shown in table 7.1 below where the stages, numbered 1 to 12, outline the events that characterised the evolution of decision-making regarding the future of Hulme in general and the Hulme Crescents in particular.

Table 7.1 Major events in the evolution of decision-making in the regeneration of Hulme

| Item | Time | Order | Edge of Chaos | Chaos |
|---|---|---|---|---|
| 12 | 1991 | | Hulme City Challenge announced (Based on the idea of partnership) | |
| 11 | 1989 | | "The govt is no longer listening to local authorities on their own. That is why it is so important for tenant groups and local authorities to join together..." (Hulme Study) | |
| 10 | 1985c | | "We have 2,864 deck access dwellings in Hulme and are committed to a policy of eliminating them (2nd Community/Council Conference) | |
| 9 | 1985b | | "We also took the unusual step of deciding to have a tenant conference rather than one dominated by politicians and professionals" (1st Community/ Council conference) | |
| 8 | 1985a | Council acknowledges the problem. "Hulme has become unmanageable" (CEO) | | Tenants' declaration: "From now we will no longer have planning done for us...we demand a future of our own design |
| 7 | 1984 | Council now in a dilemma over the problem of Hulme | | "If our opinion had been sought...the problems of Hulme would have been avoided" (Tenants) |
| 6 | 1979 | Council still appears unmoved by tenants' demands | | "Demolition of deck access housing is the only answer" (tenants) |
| 5 | 1977 | Council against the idea of demolishing. "I do not agree that it should be demolished" (Councillor) | | Tenants launch campaigns demanding demolition of deck access housing |
| 4 | 1974 | Following the tragic death of a child, Council changes housing allocation policy to allow families to move out | | Child falls to his death from a top floor flat. Tenant activism ignited |
| 3 | 1973 | Problems with the new houses begin to surface | | Tenants blamed for vandalism, crime, damp, infestation, etc |
| 2 | 1972 | Hulme redevelopment completed. Architects awarded prizes for their designs | | "Streets in the sky" deck access houses delivered to the community |
| 1 | 1960s | Hulme redevelopment begins (slum clearance and the construction of new houses). No consultations with tenants and residents. | | Redevelopments blamed by tenants for causing blight and mass disruption to community cohesion |

From the above historical account of events, we see that there was an "iron curtain" between the local authority and local residents from 1960 to 1985. The decision-making mechanism was enshrined in the notion of local authorities making decisions for local communities without the latter being consulted.

Hulme had become frozen by many years of authoritarian planning. This appeared to have been the case since the 1960s and up to about the mid 1980s when consensus was finally in sight. The once highly centralised system was beginning to loosen up under the exigencies of the (emergent) local community networks. The statement by a Manchester City Council officer in the Hulme Study (1989) was a radical turnabout in local authority thinking. From the highly centralised "we know best" spirit of the 1960s to an acceptance of the opinions of community groups as useful and valuable in the decision-making process. It represented a massive change and paved way for real progress in Hulme in the 1990s. Hulme as a system was searching for the edge of chaos, a special kind of balance (in decision-making) between central control and the power of community networks. An important point to note here is that (unlike the Hulme Crescents designed by architects!) no one designed this search process for the consensus. The system itself found that balance, thus giving credence to the notion that the process can be conceptualised as a complex adaptive system. If systems are more innovative at the edge of chaos than anywhere else, the remaining challenge is to ascertain whether the Hulme regeneration process was more innovative at this point (1985 – c1990) than at any other during the period under consideration.

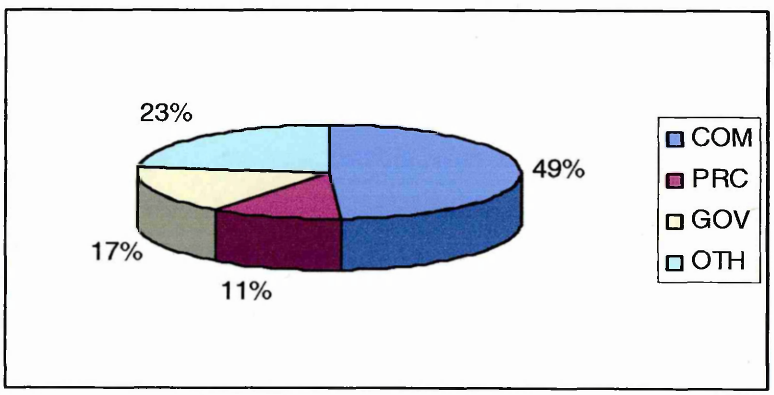
There is enough evidence in the literature on the regeneration of Hulme to confirm the notion that the Hulme regeneration processes were more innovative at this stage. One such source of evidence is from a team of professionals at KPMG who were appointed to evaluate the achievements of the City Challenge initiatives countrywide. Their report on Hulme indicated that the City Challenge programme was announced at a rather *innovative stage* (1991). It is very compelling to conclude, therefore, that the Hulme City Challenge programme was a success because it came at a time of highest innovation. The programme was like a seed planted on fertile ground - that fertile ground being the edge of chaos phase in decision-making. If one accepts this line of thought, then an important analytical tool for urban regeneration processes shall have been established by this study. Its contribution to the concept and practice of urban regeneration will be given appropriate detail in the general discussion in section

7.6. The next part of the chapter discusses the structure of social networks and their relationship with the outcomes of urban regeneration.

## 7.3 Organic analysis: Structure of social networks - 1990-2000

The ultimate aim of this part of the investigation was to understand local community participation in the regeneration processes in terms of both quality (centrality and density of connectivity) and quantity (volume of participation). The unit of analysis was the organisation while the measurement parameter was communication among the organisations in the form of meetings. On the basis of the definition of an agent provided in chapter five, 132 organisations were identified as having participated in the regeneration of Hulme between 1990 and 2002. For ease of analysis, the organisations were coded as COM (for community and voluntary sector organisations), PRC (for private companies), GOV (for central and local government departments), and OTH (for other organisations), with serial numbers against the letters completing the code. This was done after arranging the organisations into the four categories and then in (ascending) alphabetical order. The full list of agents is contained in appendix 3, while figure 7.2 below only shows the relative level (based on absolute numbers) of participation from each of the four types of agents.

**Fig. 7.2: Participants in the regeneration of Hulme, 1990 - 2000**

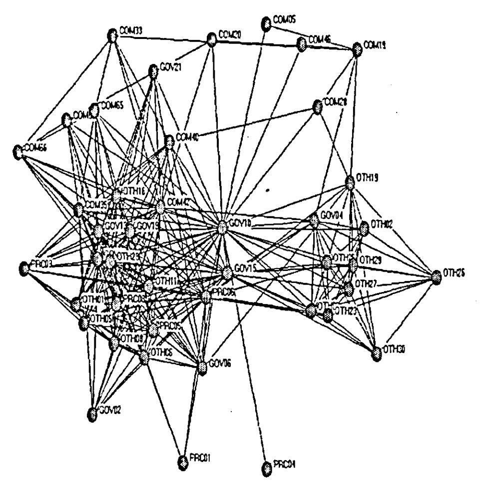



The figure shows that local community organisations had the largest number of agents participating in the affairs of Hulme. This, of course, does not translate into direct claim of supremacy of these organisations in the decision-making processes. Such attributes are a subject for further discussion in later sections. This relative apportionment was, however, useful in levelling the analytical field for selected egocentric and global network properties by way of determining weightings based on differences in participation levels among the four categories of agents. For each particular year between 1990 and 2000, three parameters of measurement were analysed, including density of relations, volume of community participation, and the amount of power (centrality) wielded by each category of agents. The analysis basically followed the general pattern of events in the regeneration of Hulme over this time period. Following the ill-defined distinction between what counts as voluntary sector and community organisations, the term community was adapted to refer to both concepts in the study. Similarly, the term local government was used to refer to both central and local authority agents of regeneration.

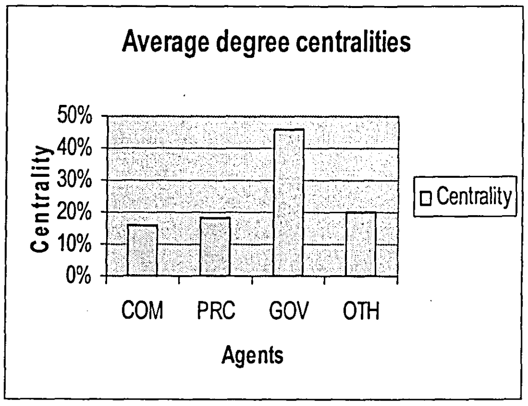
### 7.3.1 Early stages in the creation of a new Hulme: 1991 - 1992

The dawn of the 1990s has been described as having been an innovative stage in the regeneration process of Hulme. It was at this very time that the City Challenge regeneration programmes were announced by the central government. Based on archival records for netting the agents of regeneration, the total number of agents participating in the regeneration process at this stage was 23, the smallest in the period under consideration. Out of this total number of agents, community organisations accounted for 23%. The network density was 29.8% against the average density of 21.41% for the entire period. In terms of power relations, local government departments were the most central within the network, with an average centrality of 54% while that of the whole network was only 30.45%. The least connected agents, i.e. those in the bottom 10% centrality, were all community groups. The situation in terms of participation levels changed for better and by a wide margin in the subsequent year, 1992 as may be deduced from the network properties in fig 7.31. The sociograms indicate the general level of linkage among the agents. The organisations with a more central location within the networks had more connections than those at the outskirts.

Fig. 7.31 Social network properties for 1992 in the regeneration of Hulme



| | | |
|---|---|---|
| Network density | 33% | 8.25%* |
| No. of agents | 43 | |
| Community groups | 25% | |

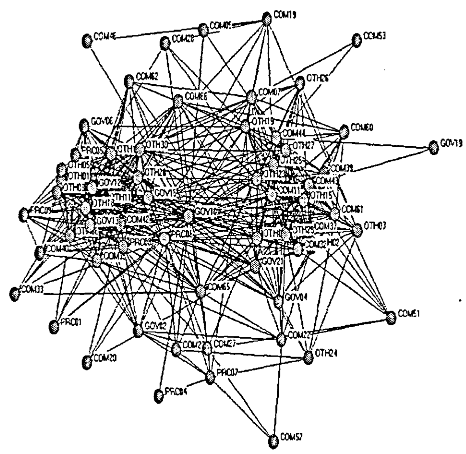



By 1992, the number of agents in the regeneration of Hulme had almost doubled to 43, with 25% of them being community organisations. This implies that although participation in the affairs of Hulme had increased, it was largely at the behest of local government departments, private companies and organisations like Housing Associations. This should not be unusual at a time when construction companies and Housing Associations are competing to secure contracts from urban regeneration programmes such as the City Challenge initiative. The network density was at its peak with 33% against the average of 21.41% over the whole period. Although central and local government departments remained the most prominent category of agents in the networks, the graph (figure 7.21 above) suggests that this prominence was slowly being eroded as centrality dropped from 54% in 1991 to 46% in 1992. Apart from one private sector organisation (PRC04), all the least connected agents were community groups. Community organisations were actually beginning to redefine their role in the regeneration process as their centrality rose from 13% in 1991 to 16% in 1992.

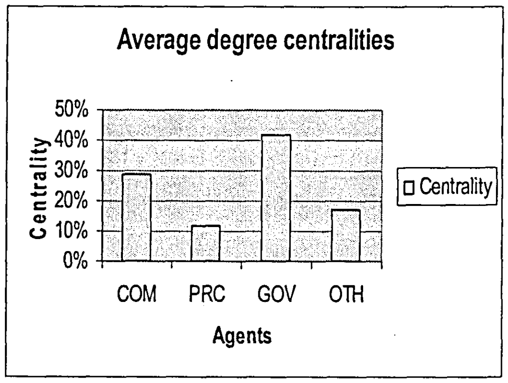
### 7.3.2 The rise of local community involvement: 1993 - 1994

The most striking feature of the Hulme regeneration networks in 1993 was the amount of community involvement, which rose to 41% of the total number of agents of 59. The network density dropped from 33% in 1992 to 21.47% in 1993. The prominence of local government departments continued to decline, this time down to 43% from the 46% of 1992. The same least central agents of 1992 were still in the bottom 10% in 1993.

Fig. 7.32 Social network properties for 1994 in the regeneration of Hulme



| | | |
|---|---|---|
| Network density | 23% | 10.81%* |
| No. of agents | 63 | |
| Community groups | 38% | |

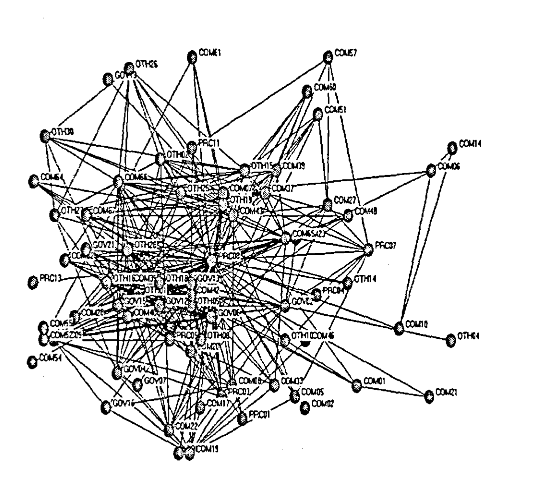



By 1994 the total number of agents had risen to 63 with 38% accounting for community organisations. The density of relations dropped further from 31% in 1993 to 23% in 1994. The prominence of local government departments also dropped from a centrality of 43% (1993) to 41% in 1994, while that of community participants rose to 29% against the network mean of 17.18%. Among the most isolated agents in 1994, 66.7% were community organisations. The period 1995-96 saw the highest number of agents in the regeneration of Hulme, virtually coinciding with the commencement of the second round of the City Challenge programme.

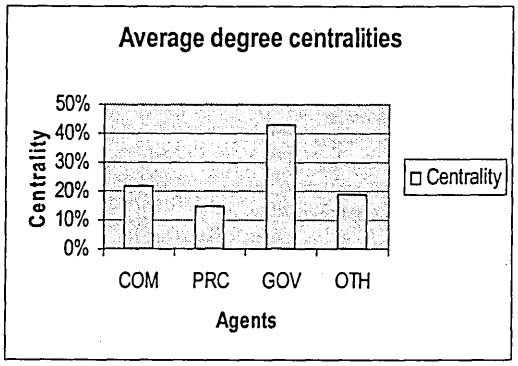
### 7.3.3 Round 2 of City Challenge: 1995 - 96

The highest record in terms of volume of agents in the regeneration of Hulme was that for 1995 when 91 agents were recorded. There were more organisations participating in the affairs of Hulme during 1995 than in any other year in the period under consideration. A possible explanation for this hive of activity could be drawn from the City Challenge timetable, which indicates that Round 2 of the programme commenced around 1995. This might have succeeded in winning a horde of organisations yearning to get involved in the regeneration process, armed with the experiences of the first round of the programme. The proportion of community involvement also soared from 38% (1994) to 47% in 1995, while the density of the network was 20.21% almost at par with the average of 21.41% for the whole period. The centrality measures for the individual categories of organisations remained more or less the same as the 1994 figures. There were also more isolated agents in this year than any other with 50% of them being community organisations and having a centrality measure of 2.2% against the network average of 13.7%. The 1995 characteristics of the networks seemed to have been replicated in 1996 save for a few minor changes, which may be discerned from figure 7.33.

Fig 7.33 Social network properties for 1996 in the regeneration of Hulme



| | | |
|---|---|---|
| Network density | 15% | 10%* |
| No. of agents | 88 | |
| Community groups | 48% | |

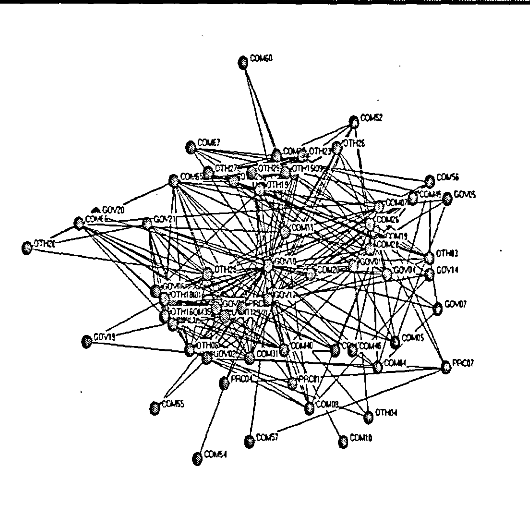



The total number of agents in 1996 was 88 out of which 48% were community organisations. The network density rose from 14% to 15%. The prominence of local government departments leaped back to a 44% high while that for community agents dropped from 30% (1995) to 22% in 1996. Private sector involvement was still relatively high, increasing from 12% centrality in 1995 to 15% in 1996. A plausible explanation could be that private interests in Hulme were still active around this time under the influence of the injection of Round 2 of City Challenge. Community organisations accounted for 60% of the least involved agents in 1996. As the City Challenge programme was coming to an end the number of agents began to decline, almost immediately in 1997.

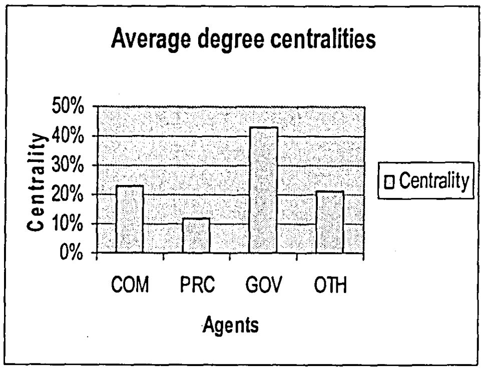
### 7.3.4 The challenge of the end of City Challenge: 1997 - 1998

In 1997 the total number of agents dropped to 73 with the community sector accounting for 45%. The network density rose further to 16% from the 15% of 1996. There was no substantial change in centrality indices between the 1996 and 1997 networks. Out of the seven least central agents in 1997, only 2 were community agents. It would appear that with the conclusion of the City Challenge programme, participation in the affairs of Hulme began to dwindle. The network properties in figure 7.34 below indicate that the number of agents dropped further in 1998.

Fig. 7.34 Social network properties for 1998 in the regeneration of Hulme



| | | |
|---|---|---|
| Network density | 17% | 8.16%* |
| No. of agents | 64 | |
| Community groups | 43% | |

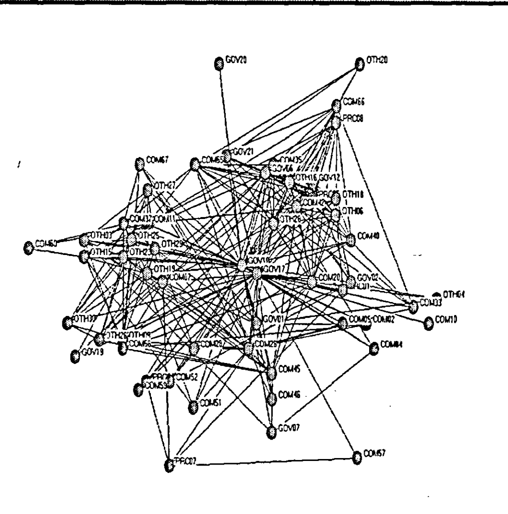



The graph shows that the volume of agents decreased further to 64 out of which 43% were community organisations. The network density continued with a steady increase, this time rising to 17%. The centrality measures for different categories of organisations remained almost the same as those of 1997 except for a slight increase to 23% for community participants. The level of involvement was lowest from six agents, 67% of which were community groups. Towards the year 2000, the most discernible feature was that private sector agents were beginning to recline from active participation in the affairs of Hulme.

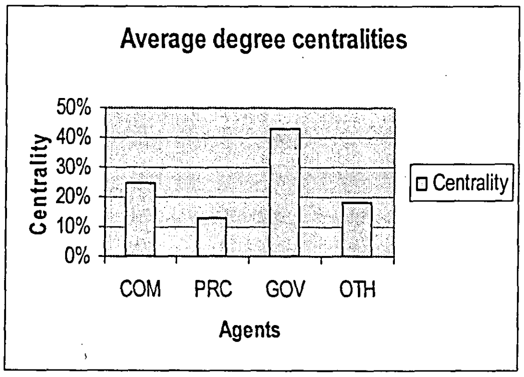
### 7.3.5 Withdrawal of private sector agents: 1999 - 2000

In 1999 the number of agents was 66 with a 44% community participation. The network density remained almost constant at 17.3%. In terms of degree of involvement (centrality) the most noticeable change was from private sector organisations whose centrality measure was on a steady decrease, 15% in 1996, 14% in 1997, 13% in 1998 and 11% in 1999. The conclusion of the City Challenge programme may be responsible for this gradual withdrawal of profit-oriented private companies from the "welfare" of Hulme activities. The composition of most isolated agents remained the same as those for 1998 with 67% community agents. The final part in the analysis of the Hulme regeneration networks was that of the 2000 network, whose properties are shown in figure 7.35 below.

Fig. 7.35 Social network properties for 2000 in the regeneration of Hulme

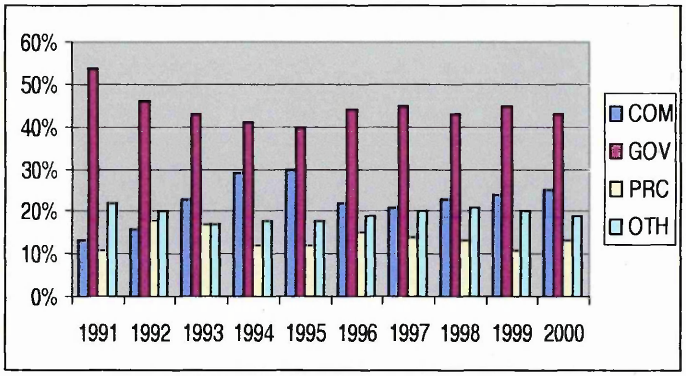


| | | |
|---|---|---|
| Network density | 15% | 8.95%* |
| No. of agents | 88 | |
| Community groups | 45% | |




The graph shows that the volume of agents had dropped to 63 in 2000, with 45% participation coming from community organisations. The density of the networks closed the reference period at 18.6%. The centrality measure for local government departments was 45% while that for community groups was 25%. Community groups accounted for 50% of the least connected agents in 2000. The average degree centralities for the four categories of agents over the entire period are summarised in figure 7.4 below to give a full picture of the disparities in the degree of involvement in the regeneration of Hulme.

**Figure 7.4 Freeman's (average) degree centralities for agents 1990 - 2000**




The graph suggests a high incidence of central control in the affairs of Hulme at the very dawn of the 1990s. Though this basically remained the case for the remainder of the period, there is evidence of diminishing central involvement from 1992 onwards. This, curiously, paralleled the steady rise in community participation in qualitative (centrality) terms. The discernible pattern with regard to private sector participation is that of high centrality coinciding with the conception of the two rounds of City Challenge regeneration initiative, reinforcing the notion that most of these agents are pursuants of economic rent rather than the welfare of local residents. The dynamics in the network parameters will now be put to test in a functional analysis involving network characteristics and local deprivation.

## 7.4 Functional analysis

The evolution of connectivity between the agents of regeneration was analysed within a framework that investigated any relationship between the network characteristics on one hand and the level of deprivation on the other. The immediate task, therefore, was to map out the deprivation index for Hulme between 1990 and 2000. The eventual index of deprivation was then used in conjunction with the selected network parameters to compute various combinations of bivariate correlations using the SPSS software package.

### 7.4.1 The deprivation landscape for Hulme 1990 - 2000

Multiple deprivation is an extremely difficult concept to define, let alone measure (Nobel, et al, 1999). Previous indices of deprivation have had to rely on particular aspects of the urban existence based on decennial census data to capture local and national deprivation levels. This implies that in between the censuses, it is virtually not practicable to attempt to measure deprivation especially at local levels. The problem is compounded by the divergent local situations that characterise specific areas. For example, in our case study of Hulme, the problem of measuring deprivation in the 1990s is complicated by the population decline that followed the implementation of the City Challenge regeneration initiative. It is estimated that the population of Hulme dropped by about 22% between 1991 and 1993 (see chapter 6), as a result of temporary relocation of families to outlying areas of Manchester to pave way for the redevelopments. However, an attempt was made in the study to map out the landscape of deprivation using a combination of scanty statistical and descriptive data.

On the basis of the criteria outlined in chapter 5, unemployment, crime, education and health were initially selected as the four key indicators of deprivation. This was, however, overshadowed by the fact that not all of these statistics are available on a time-series basis, especially at ward level. Apart from unemployment trends, none of the indicators of deprivation are kept (or collected) on a year-to-year basis in Hulme, or indeed any other ward in UK. In the face of such a void, a general description of the deprivation landscape was considered the only feasible approximation. Such a descriptive picture was then analysed in conjunction with the dynamics of unemployment trends so as to establish a case for the adoption of the latter as a general reflection of the deprivation index over this period. As a starting point, the scanty crime rate figures were plotted against unemployment trends to test for correlation. It is important to note, however, that the figures for crime do not capture the full picture of the rate of crime in Hulme at the particular reference times. This is because, like many other indicators, crime is a hybrid concept that embraces multiple dimensions, while the figures used here are only based on the rate of violence against the person expressed in terms of number of incidences per thousand residents. The statistics are the best indicator of "crime" that the researcher could extract from the archives of the police station that covers the Hulme area. The results of correlation with unemployment figures are shown in table 7.2 below.

**Table 7.2 Correlation between unemployment and crime in Hulme 1990-2000**

| | | UNEMPLOYMENT | CRIME |
|---|---|---|---|
| **UNEMPLOYMENT** | Pearson Correlation | 1 | .948(*) |
| | Sig. (1-tailed) | . | .026 |
| | N | 4 | 4 |
| **CRIME** | Pearson Correlation | .948(*) | 1 |
| | Sig. (1-tailed) | .026 | . |
| | N | 4 | 4 |

* Correlation is significant at the 0.05 level (1-tailed).

The table shows that there exists a strong positive correlation of 0.948 (significant at 0.05 level) between unemployment and crime rates in Hulme over the reference period of 1990 to 2000. Although the crime figures were not on a year-to-year basis, the correlation results generally established a case for the adoption of unemployment trends in later analyses of deprivation, especially that the general descriptive deprivation landscape was also in agreement with these two variables.

The general descriptive deprivation landscape fits well with this rather scanty statistical account, which suggests a more deprived Hulme of the early 1990s than that of towards 2000. For example, as of 1991, Hulme had the highest proportion (81.4%) of households in the city with no car and almost 90% of households lived in local authority housing, again the highest proportion in the city. In addition, 18.9% of residents had a long term limiting illness (LTLI), above the city average of 16.6% (EIUA, 1999). Out of the 33 wards of Manchester city, Hulme also had the highest number of ethnic minority residents. The 1991 census report shows that 32.2% of the Hulme population fell into one of the non-white categories compared to 12.6% citywide. The difficulties of capturing educational attainments in Hulme, and indeed anywhere else, are that pupils in the ward attend different schools in the city.

Much of the dim picture of Hulme changed for better in the latter half of the 1990s as attested to by the local communities themselves. In the absence of adequate time-series statistical indicators, perhaps deprivation can best be substantiated by an account given by the local residents themselves with regard to the amount of progress achieved in the regeneration of Hulme over this period. Interviews conducted with (and questionnaires issued to) some of the residents who have lived long enough to see change in Hulme, indicated a high level of contentment with the achievements of the regeneration activities in the area.

The interviewees and questionnaire respondents were asked to give an account of their perceptions and experiences of life in Hulme with respect to the regeneration of the area. Only one interviewee (a former councillor), out of five and three questionnaire respondents, out of 51 painted a dim picture of Hulme, singling out the lost glory of the Hulme tradition of festivity, the fear and incidence of crime, and the lack of employment opportunities as the socio-economic issues still haunting the area. The rest of the respondents pointed out that their new Hulme of 1997 - 2000 was a better place to live in than that of the early 1990s and prior to this period. These findings were supported by earlier surveys by the European Institute for Urban Affairs carried out in 1996 and 1997 in which the majority of residents felt that Hulme had improved during the time of City Challenge (EIUA, 1999). Their study further found out that overall, residents had little knowledge about City Challenge and who was responsible for it, leaving one to wonder as to who was responsible for the acclaimed notion that the pride of the new Hulme rested at the feet of the City Challenge initiative.

### 7.4.2 Relationship between network density and deprivation

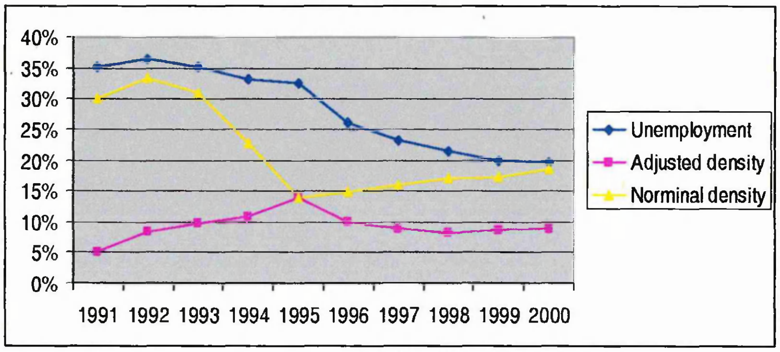
It soon became apparent in the analysis that the density figures derived from the networks were more nominal than real values and therefore do not capture the true picture of change in connectivity. This was because the volume of agents was not constant – it varied from year to year (mainly upwards), in which case the chances of the network connectivity being diluted by the inclusion of more isolated agents were high. This became evident in the relationship between density and volume of participation which showed a negative (Pearson) correlation of -0.817, significant at 0.01 level. The relationship suggested that as the volume of agents swelled, the network connectivity was loosening up. That is why the 1995 and 1996 networks had the highest number of agents in the regeneration of Hulme and at the same time recorded the lowest (nominal) density of connectivity. It therefore became necessary to smooth out the nominal density measures by taking into account the changes in the volume of agents so as to arrive at real values, which are shown asterisked in figures 7.31 to 7.35. This was achieved by multiplying the nominal values by a network participation factor (NPF), which is simply the number of agents in any one particular year expressed as a proportion of the total number of agents for the whole period 1991-2000. The results of the adjustments are shown in table 7.3 below.

Table 7.3 Adjustment of density measures to real values

| Year | Nominal density | NPF | Adjusted density |
|---|---|---|---|
| 1991 | 29.08% | 0.17 | 5.066% |
| 1992 | 33.00% | 0.25 | 8.25% |
| 1993 | 21.47% | 0.45 | 9.66% |
| 1994 | 23.00% | 0.47 | 10.81% |
| 1995 | 20.21% | 0.69 | 13.95% |
| 1996 | 15.00% | 0.66 | 10.00% |
| 1997 | 16.00% | 0.55 | 8.80% |
| 1998 | 17.00% | 0.48 | 8.16% |
| 1999 | 17.30% | 0.50 | 8.65% |
| 2000 | 18.60% | 0.48 | 8.95% |

The search for patterns between network density and deprivation was, therefore based on the adjusted figures for density. These are shown in the graph in figure 7.41 below, where the density measures are plotted against unemployment trends. The nominal density curve defines a valley-like locus of change in which the highest level of connectivity is recorded for 1991 - 92. This gradually began to decrease in subsequent years, reaching a virtual trough in 1995, before beginning to rise again up to the year 2000. However, our concern is not with the nominal figures but the real (adjusted) values of density. The curve for the adjusted density describes a parabolic pattern of change whereby connectivity begins to rise from 1991 reaching a peak in 1995 before beginning to decline and assuming relative stability for the remainder of the 1990s at an average density of 8.64%. That relative stability is discernible from the graph itself below.

**Fig. 7.51 Density of relations and unemployment in Hulme 1990 - 2000**

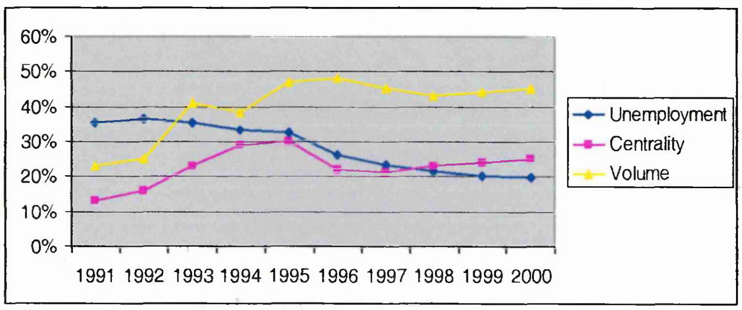



There was a rough correspondence between density of connectivity and unemployment in Hulme. The positive Pearson correlation of 0.467 (insignificant) suggested that as the density of connectivity decreased, so did the level of unemployment in the area. The implication is that high levels of deprivation are identified with densely connected networks. This throws in some elements of legitimacy to the argument that there exists a critical level of density that allows for innovation in the system. The difficult challenge is how to arrive at this appropriate level of connectivity for the networks. This question is neither new, nor without an explanation in social network analysis and complexity theory as discussed in the literature review with respect to the edge of chaos in complexity and the strength of weak ties in social network analysis. It is not feasible from figure 7.51 to pinpoint an appropriate level of density due to a number of complex issues surrounding the relationships. The discussion in section 7.5 makes reference to these difficulties surrounding the search for the edge of chaos in social connectivity and volume of participation. Despite the existence of (albeit weak) relationship between density and unemployment, the study does not make any claims of causality as these are a faculty of the analytical methods, which as the literature review suggests, have no relevance in the study of complex systems. The next section tested for correlation between the volume and centrality of community participation and the level of deprivation.

### 7.4.3 Volume of community participation and level of deprivation

Like in the previous analysis involving density of connectivity and deprivation, this section is concerned with the level of community involvement in the regeneration of Hulme as it related to the level of deprivation at different stages between 1990 and 2000. The relationships are shown in figure 7.52 below where the volume curve describes the level of community participation and that for centrality defines the changes in the degree of involvement among community groups. These two parameters are plotted against unemployment rates to test for correlation.

**Fig 7.52 Community participation and unemployment in Hulme 1990-2000**

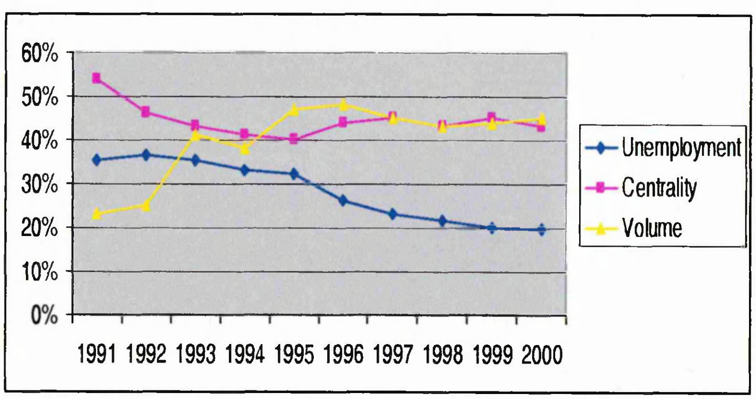



The graph indicates an increase in the volume of community participation from a mere 22% in 1991 to more than double this amount in 1996, after which there was an apparent stability for the rest of the period at an average participation level of 44.25%. There is a significant relationship (at 0.05 level) between this volume of participation and the levels of deprivation. The Pearson correlation of -0.646 statistically entails that as the volume of participation in urban regeneration increased, the level of deprivation diminished. The conclusion that can be drawn is that low levels of deprivation are characteristic of high stocks of community participation. It is important to re-emphasise that despite the existence of significance of the correlation, the conclusion is not that of a causal relationship between volume of participation and deprivation. Mere correlation between variables is no evidence of causality. In fact, attempting to reduce the deprivation problem to a single causal element would be tantamount to breaching the very foundation principles at the heart of the complexity project. For the purpose of the study it is sufficient to understand the system by noting that high volumes of community participation were identified with low levels of deprivation, because through such insight, we find appropriate room for intelligent intervention. Perhaps, like in the case of density, the biggest challenge is how to identify the appropriate volume of participation that would ensure maximal innovation in the system, which issue is discussed together with its density counterpart in section 7.5. The relationship between volume of community participation and their average centrality was significant (at 0.05 level) and positive (+0.748). This suggests that as the number of community agents of regeneration increased, their degree of involvement also increased. Finally, though insignificant, the relationship between community centrality and unemployment is negative (-0.254) indicating that low level deprivation was identified with active participation from community groups. It would appear that all these parameters have a correlation with the deprivation landscape and that they all beg for an answer to the question of critical levels in their respective measures, which issue is better discussed in a more analytical framework in section 7.5.

### 7.4.4 Central control and level of deprivation

The final part of the correlation analyses involved the relationship between the amount of central control and the levels of deprivation. Central control was derived from the mean centrality measures of local (and central) government agents at different stages between 1990 and 2000. The overall pattern, as in figure 7.4 suggests minimal changes in centrality.

**Fig. 7.53 Central control, community participation and unemployment**



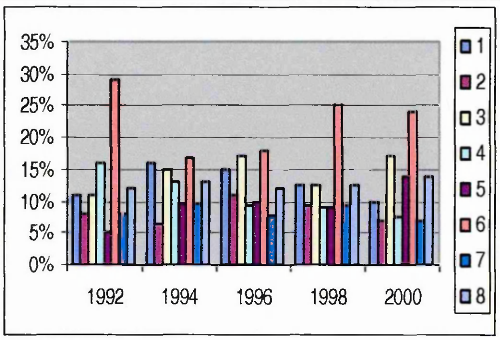
There was no significant correlation between local authority centrality and the levels of deprivation, although there was evidence of a positive correlation of +0.209. Weak as it was, the relationship suggests that high level central control is an undesirable element in urban regeneration as it was identified with (but not necessarily causing) high deprivation levels. The argument is also re-enforced by the existence of a significant correlation between central control and the volume of community participation. The Pearson correlation of -0.748 (significant at 0.05) suggests that community participation thrives in times (and places) of reduced central control. Since the latter has been identified with low levels of deprivation, by inference it can also be argued that "too much" of central control does not encourage organic growth of community agents of urban regeneration processes. There is no need to embark on a search mission for the appropriate level of central control because, after all, the entire period of analysis is characterised by high levels of central control. Contemporary literature on urban regeneration supports these findings by pointing out that the more usual case is that of too much centrality rather than too little[3]. If one accepts this hypothesis, then it can as well be argued that the system may not have had a chance of existing on the appropriate balance of central control over the reference timescale. However, this need not be a source of illusion because complex systems are in many cases extremely difficult to pin down to predictive models. The primary challenge for the policy maker should be to critically understand the very multiplicity of involvement and connectivity among the agents of regeneration, and particularly to engage in a search for the appropriate environment necessary for the evolution of social networks in urban regeneration, which aspect is dealt with in section 7.5.4. The next section analyses the range of issues of urban regeneration that community agents can and have been involved in the decision-making processes.

[3] This was the conclusion reached by the Edinburgh Scottish Homes in their studies of community participation Hulme, 1999.

### 7.4.5 Extent of community involvement in the regeneration processes

This part of the chapter attempts to investigate the extent to which community agents can be involved in the decision-making mechanisms of urban regeneration. The eight-point framework of analysis was adapted from the definition of urban regeneration by Roberts, et al (2000) as discussed in chapter three. The task involved enumerating the various issues tabled for discussion at various community meetings and other fora, sorting them out on the basis of the eight-point framework, and assigning a percentage value to each element depending on the frequency of occurrence in any particular year between 1990 and 2000. The results are shown in figure 7.61 below.

Fig 7.61 Extent of community participation in Hulme regeneration 1990 - 2000




| Key | |
|---|---|
| 1 | Education and local skills training |
| 2 | Health and safety |
| 3 | Environment and physical conditions |
| 4 | Crime and security |
| 5 | Economic progress and local employment |
| 6 | Housing |
| 7 | Administrative matters |
| 8 | General community welfare |

The graph indicates that housing was the single most predominant issue of concern among community groups. This should ideally not be a surprise considering the predominantly residential nature of Hulme and the long history of housing problems in the area. According to the graph, the issue was more outstanding in the early 1990s than in later years. It may be recalled that this was a time when housing demolition, relocation of residents, and subsequent rebuilding were the main pre-occupation for both the local communities and the local authority. As the redevelopments took pace, it would appear that, though still the most prominent, the issue of housing had generally fallen off the agenda between 1994 and 1996, averaging 17.5%, and only to resurrect in 1998 at 25% all the way through to 2000. This latter rise to prominence of the housing issue on the community agenda may be attributed to the completion of the housing redevelopments and the re-housing exercise that followed. It is very compelling, however, to conclude that local communities (at least in the case of Hulme) are more pre-occupied with housing matters than any other aspect of urban regeneration.

Another element of regeneration that appears to exhibit a distinct pattern is that of crime and security. The graph shows a steady decline in the prominence of crime and security issues on the agenda of community meetings from 16% in 1992 to 7% in 2000. Plotting this trend against crime rate figures reveals the existence a strong positive correlation of 0.914 significant at 0.01 level. This appropriately suggests that as the rate of crime reduced in the area, the issue equally ceased to make front pages of community news and top lines on the agenda of community meetings. The graph further suggests that community groups spent less time on internal administrative matters than they did on the real issues affecting their common fate as residents of Hulme. The overall conclusion that can be drawn from the graph is that there are no "sacred cows" in terms of the issues that community groups can participate in the decision-making processes affecting their welfare. What is at stake perhaps is the question of the meeting point between these organic groups and central (local) authority decision-makers. Is there an edge of chaos abstract phase transition that allows for maximum innovation in the decision-making processes? The question has indeed been addressed in the first part of this chapter and is further qualified in the quest for an enabling environment for the evolution of community networks of regeneration in section 7.5.5. The next part of the chapter addresses the last of the three research objectives which looked at the structure of the existing (as of 2002) social networks of regeneration.

## 7.5 Structure of social networks and the quest for an enabling environment

The structural components of the Hulme regeneration networks discussed above under the second objective of the research were based on archival data. There are a number of limitations associated with such data types as detailed in chapter five. Consequently, no direct comparison was made here with the 2002 network properties. The two sets of networks were constructed from two different strands of communications data. The 1990 - 2000 networks were purely based on archival records in the form of various documents such as minutes of meetings of the organisations concerned. There were no practical means of unearthing other forms of communication among the agents, such as telephone, electronic mail, fax, and many other avenues that have come with the communications revolution. However, in the face of limited scope for alternative data sources and collection techniques, archival records can be and are a reliable fountain of relational data as demonstrated in the analysis above, especially where the primary objective is to track change, rather than necessarily to trace the minute details of the networks.

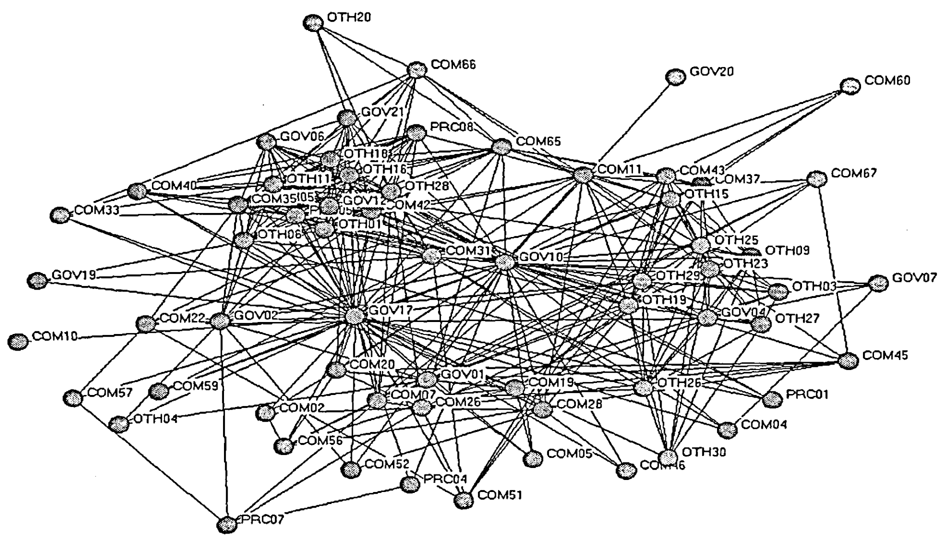
The total number of agents netted through the snowballing technique (see chapter five) was 62, less by only two agents than the total for the 2000 networks, netted from the use of archival records. The same code names as those for the 1990 - 2000 networks were used here since there were no new additional agents identified. Table 7.4 shows the agent composition of the networks.

Table 7.4 Composition of agents in the regeneration of Hulme 2002

| Organisation | Absolute | % |
|---|---|---|
| Community and voluntary | 30 | 48% |
| Private companies | 5 | 6% |
| Local and central govt departments | 11 | 17% |
| Other organisations | 16 | 29% |
| **Total** | **62** | **100%** |

The results in the table do not suggest any form of supremacy based on the proportions of participation. These are however used in the analysis mainly for weighting purposes. The analysis of the results revolved around those properties that can be narrowed down to the intrinsic characteristics of the individual agents or group of agents. These properties included degree centrality, betweenness, and clique analysis. The other parameters such as the density of connectivity are the properties of whole networks and in the absence of the need for a comparative analysis, these could only be used at a descriptive level. The structure of the networks is presented in the sociogram in figure 7.62 below, with a more elaborate version in appendix 4.

Fig 7.62 Structure of the Hulme regeneration networks 2002




The whole network is fully connected, implying that, for every pair of agents, there is a path of any length that connects them. The more (physically) central an agent is within the networks, the higher the degree of connectivity associated with that particular agent. Consequently, those agents at the periphery of the sociogram have fewer connections with the other agents than those at the centre. Whether this poverty of connectivity translates into social isolation on the ground is an issue that was investigated later in the analysis.

### 7.5.1 Degree centralities

The amount of power commanded by each of the individual agents in the network is measured by their degree centralities. The measures are based on the number of communication links the individual agents have, together with the values of those linkages. Unlike the 1990 - 2000 networks, which had unitary values, the 2002 network lines have values based on the frequency of communication. This is one of the fundamental differences that rendered the two sets of networks incompatible. The various degree centralities, as computed from the Ucinet 6 software package for social network analysis

(Borgatti, 2001), are shown in table 7.5. The table has been rearranged in descending order purely for ease of analysis. The key to the names of the agents is in appendix 3.

**Table 7.5 Freeman's Degree centralities for agents of Hulme regeneration networks 2002**

| Agent | Cent | Agent | Cent | Agent | Cent | Agent | Cent |
|---|---|---|---|---|---|---|---|
| GOV10 | 46% | OTH19 | 15% | COM66 | 12% | COM04 | 4% |
| GOV17 | 44% | COM07 | 14% | COM40 | 11% | COM05 | 4% |
| COM42 | 24% | OTH01 | 14% | OTH26 | 11% | PRC01 | 4% |
| OTH28 | 22% | COM19 | 14% | OTH03 | 10% | COM02 | 4% |
| GOV12 | 19% | OTH05 | 14% | OTH27 | 10% | GOV07 | 4% |
| OTH16 | 19% | OTH15 | 14% | COM20 | 9% | COM52 | 4% |
| COM11 | 18% | OTH23 | 14% | COM22 | 9% | OTH16 | 4% |
| COM35 | 18% | OTH26 | 14% | COM28 | 8% | COM60 | 4% |
| OTH11 | 18% | COM26 | 13% | COM45 | 8% | OTH04 | 3% |
| OTH18 | 18% | COM37 | 13% | OTH30 | 8% | COM32 | 3% |
| OTH29 | 17% | GOV06 | 13% | COM51 | 7% | COM46 | 3% |
| COM65 | 17% | OTH09 | 13% | COM56 | 7% | COM57 | 3% |
| COM31 | 16% | GOV01 | 12% | COM43 | 6.5% | GOV19 | 3% |
| PRC05 | 15% | GOV02 | 12% | COM33 | 6% | COM59 | 3% |
| OTH06 | 15% | GOV04 | 12% | COM67 | 6% | COM10 | 1% |
| PRC08 | 15% | GOV21 | 12% | PRC07 | 5% | GOV20 | 1% |

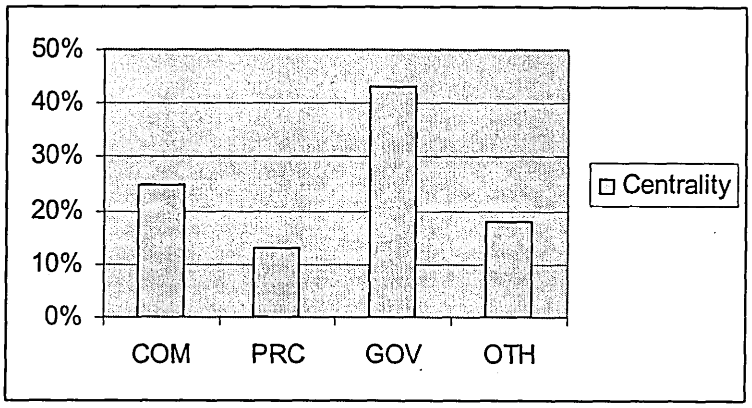
**STATISTICS**

| Mean | Std Dev | Sum | Var | SSQ | MCSSQ | Min | Max |
|---|---|---|---|---|---|---|---|
| **11.56** | 8.20 | 739.50 | 67.26 | 12849.25 | 4304 | 1.00 | 46.00 |

Starting with the highest 10%, the table shows GOV10, GOV17, COM42, OTH28, GOV12, and OTH16 as the top 10% active agents in the networks in that order. Among them, the six top agents have an average degree centrality of 29% far above the network average of 11.56%. GOV10 is the Manchester City Council (CEO) with a degree centrality of 46%, followed by GOV17 - the Moss Side and Hulme Partnership with a degree centrality of 44. The Moss Side and Hulme Partnership is the local regeneration partnership and, though funded by the city council, was found to be more closely identified with the community groups of Hulme by virtue of being perceived by the local residents as an initiative of their own community. COM42 with a degree centrality of 24 is the Hulme Tenants Participation Project, a pure community initiative formed to oversee and spearhead the involvement of local residents in the regeneration processes. With a degree centrality of 22, the Guinness Trust (OTH28) is another of the highly central agents in the network. This is a housing association formed and owned by the local communities themselves. OTH16 is also a housing association based in the neighbouring inner city area of Moss Side, while GOV12 is the Manchester Housing. There were 33 agents with above average power centralities. Out of this, 30% were community agents, 25% local and central government agents, 6% private companies and 40% were those classified as other organisations, including housing associations and education establishments.

At the bottom of the degree centrality table, were the following 6 (10%) least central agents: GOV20, COM10, COM59, GOV19, COM57 and COM46 in decreasing order of degree centrality. The least two prominent agents in the networks (COM46 and COM10) were the Lesbian Community Project and the Asian Women's Community Outreach Project, each of which had a degree centrality of 1. Both of these agents were project initiatives founded on the premise of serving the interests of particular categories of the community, i.e. Lesbians and Asian women. The second least prominent actors, COM59, GOV19 and COM57 were all, except for one, community groups and had each a degree centrality of 3%. COM59 was a family club within the Royce area of Hulme, while GOV19 was an adventure play area based in the north of Hulme. COM57 was a community project, which ironically had been in existence for a longer period than an average community initiative. Out of the total number of agents of 31 with below average degree centralities, 65% were community agents, 10% local government agents, 7% private companies and 6% were those classified as "other" organisations. These egocentric properties of the networks were generally in conformity with the average degree centrality differences across the four categories of agents as suggested by figure 7.63 below.

**Fig 7.63 Freeman's average degree centralities for the agents in 2002**




The graph shows that, despite not appearing among the top 10% most central agents, the organisations classified as "other" were on average the second most prominent agents in the networks. The graph also indicates that local government departments (GOV) were still the most highly connected agents in the networks with an average centrality of 43% against the network mean of 11.56. The least involved agents were private companies, probably because, with the conclusion of the City Challenge programme, there were no major construction projects at this stage in Hulme to attract these rent-seeking agents of regeneration.

## 7.5.2 Betweenness centrality

This section analysed the betweenness centralities of the individual agents in the 2002 regeneration networks. Rather than being a freestanding concept in social network analysis, betweenness is one of the three popular centrality measures, the other two being degree and closeness. Betweenness is an indicator of the extent to which an agent plays, or is positioned to play, an intermediary role in the networks. The importance of this concept in social network analysis in general and (for our purpose) to urban regeneration networks lies in the understanding that an agent might have fewer direct connections (degree) and yet still play a powerful (intermediary) role in the networks. Thus, in certain networks, degree centrality on its own may not suffice as a sole measure of the importance of individual nodes in the networks and it would be necessary to cross check with the betweenness of the particular agents. Table 7.6 below shows the betweenness centralities for the 2002 networks, where betweenness ranges from 0 to 548.16.

**Table 7.6 Freeman's betweenness centralities for the agents in 2002**

| Agent | Btns. | Agent | Btns | Agent | Btns | Agent | Btns |
|---|---|---|---|---|---|---|---|
| GOV10 | 548.162 | GOV04 | 17.077 | PRC08 | 7.285 | GOV19 | 0.167 |
| GOV17 | 511.518 | COM43 | 16.957 | COM20 | 6.401 | PRC05 | 1.649 |
| COM11 | 71.872 | OTH09 | 16.039 | OTH18 | 6.382 | OTH01 | 1.616 |
| COM65 | 49.940 | OTH11 | 15.423 | COM51 | 5.938 | OTH05 | 1.161 |
| OTH28 | 44.220 | COM22 | 15.118 | COM28 | 5.932 | GOV07 | 1.000 |
| COM07 | 43.866 | GOV21 | 14.770 | PRC04 | 5.521 | COM02 | 0.912 |
| COM42 | 41.106 | COM66 | 14.396 | COM40 | 5.360 | COM52 | 0.333 |
| COM31 | 35.156 | OTH03 | 12.848 | OTH06 | 5.125 | COM05 | 0.182 |
| COM26 | 33.890 | COM35 | 12.404 | GOV06 | 4.885 | COM46 | 0.182 |
| COM19 | 33.687 | OTH16 | 11.808 | PRC07 | 4.411 | GOV19 | 0.167 |
| GOV02 | 28.893 | OTH23 | 10.641 | COM67 | 3.956 | PRC01 | 0.000 |
| OTH29 | 26.468 | GOV12 | 9.675 | OTH30 | 3.546 | COM10 | 0.000 |
| OTH19 | 22.785 | OTH26 | 9.253 | COM04 | 3.026 | OTH04 | 0.000 |
| OTH15 | 22.163 | COM45 | 8.232 | COM33 | 2.891 | COM59 | 0.000 |
| GOV01 | 20.886 | COM56 | 7.443 | COM57 | 2.615 | GOV20 | 0.000 |
| COM37 | 20.821 | OTH25 | 7.402 | OTH19 | 0.333 | COM60 | 0.000 |

STATISTICS

| Mean | Std Dev | Sum | Variance | SSQ | MCSSQ | Min | Max |
|---|---|---|---|---|---|---|---|
| 28.72 | 91.22 | 1838 | 8321.38 | 585353.25 | 532568.19 | 0.00 | 548.1 |

The table indicates that Manchester City Council (GOV10) had the highest betweenness centrality in the network, followed by the Moss Side and Hulme Partnership (GOV17). The two agents had betweenness centralities of 548.162 and 511.518 respectively, while the average for the network was only 28.7. The top 10% agents in terms of betweenness were GOV10, GOV17, COM11, COM65, OTH28 and COM07. There were only 11 (17%) agents with above average betweenness centralities, out of which 63% were community organisations, 27% were local government departments, 10% were private companies and 9% were classified as other. Based on betweenness centralities, the following organisations had no capacity to play an intermediary role in the networks: PRC01, COM10, COM59, GOV20, COM60 and OTH04 as they all had a betweenness centrality of zero. COM10 was an ethnic minority community group while COM60 was a community association based in a geographically isolated part of Hulme in the St. George area. Unfortunately, the physical isolation appears to have translated into social and economic deprivation. This was attested to by the questionnaire respondent from a community group based in the area itself, who had this comment to make about the regeneration activities in Hulme:

> As a private householder + not a tenant, I have been delighted and pleased to see so many improvements in Hulme but very sorry that our area [St Georges] that so very few improvements came to our area, particularly social matters which have gone, in the main, to the middle and outer edges of Hulme, which saw the greater part of demolition. St Georges is on the border of Trafford + we were always the last in the queue for benefits. Because of the death of 5 of our helpers + advancing age/retirement/illness, I am only one left + we folded our charity 2 years ago. (Source: Verbatim extract from the social survey questionnaire)

This community group also appeared as one of the consistently isolated agents in the networks between 1990 and 2000

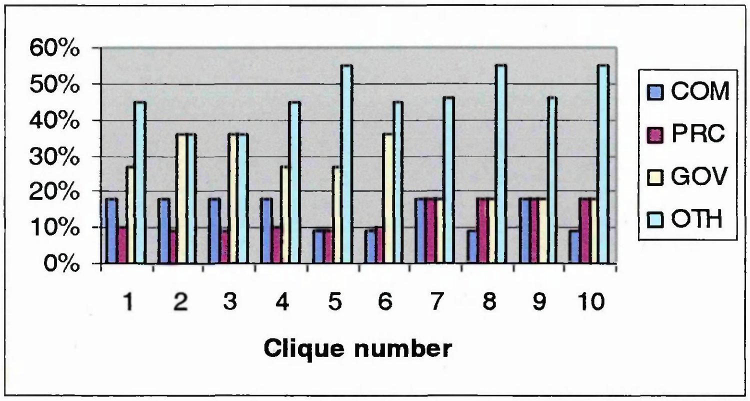
### 7.5.3 Clique analysis

A clique was defined in chapter 5 as a maximal complete sub-graph, in which every pair of agents is directly connected by a line and the clique is not contained in any other clique. The significance of clique analysis in this study was the identification of the pattern of collaboration among the agents within the regeneration networks. Setting the lower limit as a three-member clique yielded 112 cliques from the 2002 networks. It would be too cumbersome to attempt to look for discernible features from this huge volume of cliques. Therefore, for ease of analysis and convenience, the analysis overlooked the intermediate cliques and concentrated on those containing the lowest and the highest number of cliques. The smallest clique contained three members and there were 36 such cliques in the networks. The largest clique contained eleven members and there were ten of them in the networks. Beginning with the three-member cliques, the analysis basically focused on the composition of the cliques, with particular attention to community participation. The lowest clique members are listed in table 7.7 below.

| Table 7.7 Three-member cliques from Hulme regeneration networks | | | | | | | |
|---|---|---|---|---|---|---|---|
| No | Clique members | | | No | Clique members | | |
| 1 | PRC04 | GOV10 | GOV17 | 19 | COM19 | OTH03 | GOV04 |
| 2 | COM46 | GOV10 | GOV17 | 20 | COM19 | COM28 | OTH19 |
| 3 | COM02 | GOV10 | GOV17 | 21 | COM22 | COM51 | GOV17 |
| 4 | GOV04 | COM42 | GOV10 | 22 | COM22 | GOV17 | COM57 |
| 5 | COM37 | GOV10 | COM67 | 23 | COM22 | GOV04 | OTH29 |
| 6 | COM04 | GOV07 | GOV10 | 24 | COM02 | COM26 | GOV17 |
| 7 | OTH09 | OTH11 | GOV10 | 25 | COM26 | COM51 | GOV17 |
| 8 | GOV06 | GOV10 | OTH19 | 26 | COM31 | OTH15 | COM51 |
| 9 | COM07 | COM11 | GOV17 | 27 | COM31 | COM51 | GOV10 |
| 10 | COM07 | GOV17 | Org102 | 28 | COM20 | COM45 | COM56 |
| 11 | COM07 | GOV17 | Org119 | 29 | COM45 | COM56 | COM67 |
| 12 | COM07 | COM26 | PRC07 | 30 | COM02 | GOV17 | COM56 |
| 13 | COM07 | COM11 | PRC08 | 31 | COM20 | GOV17 | COM56 |
| 14 | COM07 | OTH19 | OTH26 | 32 | COM11 | GOV17 | GOV19 |
| 15 | COM07 | COM19 | OTH19 | 33 | COM31 | GOV17 | GOV19 |
| 16 | COM07 | OTH23 | OTH26 | 34 | OTH20 | OTH28 | GOV21 |
| 17 | COM19 | COM33 | GOV17 | 35 | COM31 | GOV17 | OTH26 |
| 18 | COM19 | COM46 | GOV17 | 36 | COM31 | OTH19 | OTH26 |

The total number of agents present in the smallest cliques was 39, whose composition was 46% community groups, 18% local government agents, 10% private companies and 26% "other" organisations. In terms of co-membership, the Moss side and Hulme Partnership (GOV17) had the highest index as it existed in 18 cliques, while Manchester City Council (GOV10) and Aisha Child Caring Project (COM07) had the second highest indices of appearing in 8 cliques each. Other agents with relatively high co-membership indices were the Hulme Alliance of Tenants and Residents (COM31), Diverse Resources (COM19) and St. Wilfrid's Catholic Church (OTH26) all of which have a co-membership index of 5. Apart from OTH26 (other), all these organisations are community groups. There were twenty agents with the lowest co-membership index of 1. Eight (40%) of these were "other" organisations, while 5 were community groups, 4 were private companies and 3 were local authority agents. The results suggest that the lowest member cliques in the networks were mostly dominated by community groups. This argument is consolidated by the fact that out of the 36 cliques with the lowest members, only four (11%) had no community participants within them. Based on co-membership indices, it appears that those classified as "other" organisations were the most flexible agents in terms of making alliances with other organisations in the networks. However, the picture may not be the same with the larger cliques. The composition of the ten largest 11-member cliques is shown in the graph in figure 7.64 below.

**Fig. 7.64 Composition of the largest cliques in the 2002 networks**



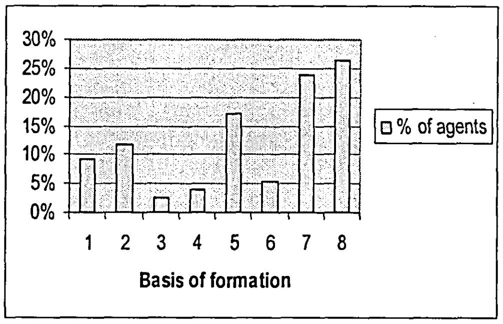

The ten eleven-member cliques together had a total number of fifteen types of agents. The composition of this total is such that there were only two community groups, two private companies, four local authority departments and seven other organisations. Seven agents were present in all the ten cliques, implying that each of them had a co-membership index of 10. From these, four of them were housing associations, one was a private company, while the other two were the Manchester City Council and the Hulme Tenants Participation Project. Other agents with relatively high co-membership indices were the Family Housing Association (OTH05), the Moss Side and Hulme Partnership (GOV17), the Housing Corporation, North West (OTH06) and the Moss Care Housing Association (OTH16) with co-membership indices ranging from 5 to 6. Those agents with below average co-membership indices included the Arawak Housing Association (OTH01), the Hulme Housing Office (GOV06) and Manchester Professional Services (PRC08) with co-membership indices of 4, 4, and 2 respectively. The results suggest that, unlike in the case of smaller cliques where community groups were predominant, larger cliques were characterised by active participation from more established formal organisations, particularly housing associations. In the next section, the discussion takes a swipe at the enabling environment for the evolution of community agents of regeneration.

### 7.5.4 The enabling environment for emergence of social connectivity

The study has thus far demonstrated that there exists a connection between social connectivity (density, volume, and centrality) and the outcomes of urban regeneration processes. The evolution of a rich mixture of community activism and involvement in the affairs of Hulme evidently paralleled the general level of betterment that accrued to the people of Hulme. Since social connectivity was identified with the salutary outcomes of urban regeneration, a step further was taken to investigate the conditions under which such civic virtue thrives. The line of argument is that social networks in urban regeneration are complex systems and thus more of a subject of emergence than (centrally) designed processes. They emerge to higher levels of fitness in terms of quality (density of connectivity and centrality) and quantity (volume of participants), in the midst of the auspicious environment. The enabling environment was analysed by way of investigating the various underlying reasons behind the formation of community groups in the regeneration processes and particularly what influenced them to operate in Hulme. This was achieved by issuing questionnaires to the agents that were in existence at the time of the surveys where respondents were asked specific questions regarding the creation of their community organisations. In addition, most of the existing archival records and internet websites had an account of the genesis of the organisations and their impetus to operate in Hulme. Thus, this part of the research revolved around the two major questions of 1) why the group was formed, and 2) why in Hulme?

On the question of agent formation, the various types of responses to the research questions were analysed within the same kind of framework used in section 7.3.5 in the investigation of the issues that community groups were involved in. The framework is a reflection of the totality of the elements contained in the definition of urban regeneration. It was appropriately recognised in the analysis that the bases of group formation were not all mutually exclusive but that some of them were interconnected and, therefore, may find their expression in more than one aspects of urban regeneration. An example of this nesting of elements is a group founded primarily on dealing with issues of mental health among members of black ethnic minorities. In this case, there are two scores for the agent concerned one for meeting health needs (item 2) and the other for particular interest group needs (item 7). Each aspect of regeneration was then given a percentage weight according to the overall score. The results of the investigation are shown in figure 7.81 below.

Fig. 7.71 Bases of formation of community agents of regeneration in Hulme

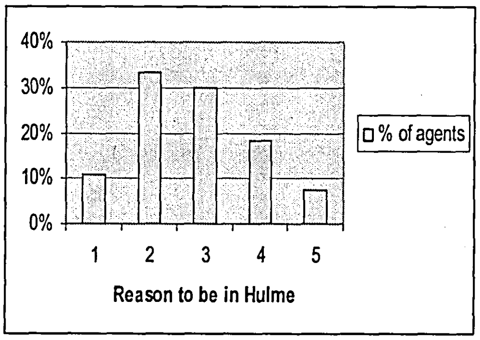



| Key | |
|---|---|
| 1 | Education and local skills training |
| 2 | Health and safety |
| 3 | Environment and physical conditions |
| 4 | Crime and security |
| 5 | Economic progress and local employment |
| 6 | Housing |
| 7 | Particular interest group needs |
| 8 | General community welfare |

The graph shows that the most profound reason behind the emergence of community agents of urban regeneration was the quest for general community welfare, followed by the issue of social exclusion. Other aspects with relatively high ratings (above 10%) were health and safety, and the issues of unemployment and the local economy. Despite the prominence of housing matters on the agenda of community group meetings as demonstrated in section 7.3.5, the evidence adduced here (figure 7.71) indicates that few (5%) organisations were founded on the premise of the housing problem. Similarly, environmental issues and crime seemed to be more of a common good than the concern of particular segments of the community. Though fairly catered for, education and local skills training were perhaps considered more as the responsibility of central (local) authorities than something primarily calling for the agency of community groups. However, like many other aspects, this may well have been covered under the general item of community welfare.

The second part in the investigation of the environment that triggers the emergence of community agents of regeneration related to the reasons why these organisations decided to operate in Hulme. The answer to this research question may appear to be obvious in that most of them were after all dubbed local community organisations and were therefore more likely to be formed by local residents themselves. However, getting the true picture from the agents themselves was considered a higher faculty than being presumptive and, indeed when the investigation was conducted, a catalogue of reasons for locating in Hulme was unearthed. Unlike in the previous analysis where the analytical framework was imported (from the definition of urban regeneration), the check-list used here emerged from the very evidence collected from community agents. A net 5-point framework of analysis was derived, and the results are summarised in figure 7.72 below.

Fig. 7.72 Community agents and their reasons for locating in Hulme




**Key**

| | |
|---|---|
| 1 | Space availability |
| 2 | Members living in the area |
| 3 | Response to community needs in the area |
| 4 | Long history of establishment |
| 5 | No particular reason given |

The study revealed that community agents of urban regeneration emerged in the midst of any or indeed a combination of the following factors: space, locality of members, response to local needs, long history, while other organisations had no particular reasons for being in the area. The graph (figure 7.72) suggests that most of these organic groups (33%) were located in Hulme because the founder members live(d) in that area. Most community respondents to the questionnaires were in fact quick to indicate that their groups were formed by local residents in the quest for local solutions to a diversity of problems affecting the area. The second highest factor of location was the desire to respond to the needs of local communities in the area. This foundational factor was not limited to members of the Hulme community alone. It finds its expression mainly in the involvement of such groups as voluntary sector organisations, which are more national than local in terms of aerial coverage and are at liberty to decide on which local areas and situations need their services. The history of some of the community groups was too long to be directly matched to the recent and contemporary needs of the Hulme community. These were agents usually formed by religious organisations (churches and schools) which were likely to have been in the area for millennia. Another crucial factor of location (above 10%) was that of space availability, i.e. space for social interaction. There were indeed some organisations formed by members living outside Hulme, mainly from the neighbouring Moss Side, who had been attracted to Hulme by the availability of community resource centres there. By locating in Hulme, they unconsciously served to boost the stocks of social capital in the recipient area. A few of the organisations could not account for their reasons for being in Hulme. This narrowed down the factors of community group location to the four issues of space availability, domicile of members, the desire to meet local needs, and long history of establishment in the area, all which should, nevertheless, not be viewed in isolation as they are not mutually exclusive. These issues, together with the bulk of the previous findings will now form the basis of a detailed discussion in the next section with regard to the utility of the analysis in urban regeneration decision-making processes.

## 7.6 Discussion

The discussion is conducted within a tripartite framework derived from the three concerns of the study as contained in the research objectives. The first level of analysis, therefore, looks at the complexity test of urban regeneration processes. The second reflects on the structural aspects of urban regeneration networks, together with a functional analysis that weighed the network parameters against the deprivation landscape of Hulme, while the third level is informed by the search for an enabling environment for the evolution of social networks.

The historical account of the regeneration of Hulme established a strong case for conceptualisation of urban regeneration in terms of complex self-organising systems. Based on the characteristic features of complex systems as the conceptual criteria, the study revealed overwhelming evidence of complexity tendencies in the regeneration processes. The crowning piece of the investigative judgement was in the edge of chaos hypothesis, facilitated by the NK landscape model. Here, the decision-making processes of Hulme regeneration were viewed through the lenses of complexity theory and the edge of chaos in particular. The results suggested a highly suspicious co-existence (in the late 1980s to early 1990s) of consensus building and the level of innovativeness such as was never witnessed in Hulme since the conception of real measures to tackle the urban problem. It is, therefore, argued in this study that such a coincidence of maximal innovation at a time when the system can be described as "neither too centrally-controlled nor too free market-led", describes the behaviour of a complex self-organising system.

Even before attempting to relate the structural components of the networks to the achievements of Hulme regeneration, there are important insightful lessons to be learnt from the structural and historical analysis itself with regard to the understanding the Hulme regeneration processes and securing informed intervention. Although the 1990 - 2000 networks (based on archival records) were less accurate in capturing the picture of social connectivity than those of the 2002 networks (based on social surveys), the former provided a more reliable guide to an understanding of the regeneration processes as an evolving system. This is essentially because, unlike the 2002 network parameters, which were at best a snapshot of the structure of the networks at the time of the surveys, the 1990 - 2000 analysis was based on a historical account of change, which is an essential element in the understanding of complex systems. By embracing the historical dimension of the networks, it was possible in the study to deduce pattern between social network parameters and the deprivation landscape of Hulme. The starting point in the discussion is, therefore, an emphasis on the need to appreciate the historical dimension of urban regeneration processes. A snap survey, accurate as it might be, does not give us as much insight into the system as the historically based analyses of the networks. It follows from this, therefore, that the longer the timescale involved, the less accurate the depiction of the network structures, but the better the information we get to understand the dynamics of the system. Since understanding is a higher faculty than merely operating the contemporaneous variables of the system, history should be regarded as an essential element in the quest for well-informed intervention in urban regeneration processes. A related issue to the historical importance of social network structure that provides a tool for analysis and intervention is the ability to identify consistently low profile, isolated agents within a time series of regeneration networks. This can primarily be discerned from the graphs of social networks themselves where the less connected agents appear at the fringes of the sociograms while the most active (well-connected) ones take more central locations, although the easier way to do this is to compute the degree centralities of all the agents in the networks and noting those with low centrality indices. In this study, the rule of thumb adopted was to consider the agents in the bottom 10% centrality in each year. Those that were bracketed in this category for more than two years within the reference period are shown in the table below, together with the number of years that they featured in the bottom 10% centrality.

Table 7.81 Least active agents in the regeneration of Hulme 1990 - 2000

| Code | Agent's name | No. of years |
|---|---|---|
| COM05 | Africa Caribbean Mental Health Project | 4 |
| PRC04 | Firmstart (Manchester) ltd | 8 |
| COM46 | Lesbians' Community Project | 5 |
| COM57 | NIA Project | 4 |
| COM55 | MSSL | 5 |
| GOV20 | Rutland Day Nursery | 5 |
| COM54 | MPSL | 4 |
| COM10 | Asian Women's Outreach Project | 4 |

The table shows that there were 6 (66.7%) community agents of regeneration that were consistently in the bottom 10% of centrality between 1990 and 2000. Once the "most deprived" agents have been fairly identified, the challenge to the decision-maker is to probe into the reasons why such organisations are in perpetual isolation. This would form a solid foundation upon which to find ways of awakening such agents from the doldrums of isolation and thereby enhancing the entire stock of social capital, which the study identified as a positive good in the regeneration processes.

A critical inquiry into the underlying factors responsible for the low participation levels from certain agents is beyond the scope of this study although an attempt was made to assess the propitious environmental conditions that stimulate community involvement in urban regeneration. This is given appropriate detail later in the discussion. Apart from helping to identify low profile agents in the networks, it follows that the graphs of social networks, coupled with centrality computations, can also be used to identify the most consistently active agents. These, accordingly, have a more central position in the networks and higher degree centralities. Again, based on the 10% rule of thumb, the agents in table 7.82 below are the organisations that were in the top 10% centrality for more than two reference years within the period of analysis.

Table 7.82 Most active agents in the regeneration of Hulme 1990 - 2000

| Code | Agent's name | No. of years |
|---|---|---|
| GOV10 | Manchester City Council | 10 |
| COM42 | Hulme Tenants Participation Project | 9 |
| PRC06 | Hulme Regeneration ltd | 5 |
| OTH28 | The Guiness Trust Housing Association | 7 |
| GOV12 | Manchester Housing | 5 |
| GOV17 | Moss Side and Hulme Partnership | 4 |
| OTH16 | Moss Care Housing Association | 4 |

The table shows that there was only one community agent of regeneration appearing in the top 10% consistently most active agents. It can also be deduced from the table that this upper level of involvement is dominated by the more established formal organisations. The utility of this kind of knowledge is that the decision-maker will easily identify samples of agents that can be used to draw lessons for other agents with regard to achieving sustainable best practice in community participation in urban regeneration. Moreover, and perhaps most important, the central (local) authority decision-makers would use such a framework to make decisions on resource allocation in fostering community involvement in urban regeneration. Familiarisation with the auspicious conditions necessary for the emergence of community agents may equally equip the decision-maker with a certain amount of control on the volume of such groups in the regeneration processes, through, for example, providing the space requirements for social interactions which the study identified as one of the drivers of change in the evolution of community agents of regeneration.

At a functional level, the study generally revealed the existence of significant correlations between network parameters and levels of deprivation in Hulme. The original project in this regard was to engage in a search for the appropriate level of both connectivity (density) and amount of community participation (volume) in urban regeneration. This goal was not achieved in the study due to some overriding complications. The most profound challenge, perhaps, was the realisation that there was no single amount of deprivation that could conceptually be accepted as the appropriate level, which the study could then match with the density of social connectivity and volume of participation. Zero unemployment rate, for example, might be argued as the desired target, but this is practically way off the grounds of the real world, if not a breach of social order in itself considering that equilibrium in complex systems is a straight recipe for death. Secondly, the appropriate density and volume of participation may still be resting in future, outside the 1990 - 2000 range, and at a point in time that cannot be predicted. The nearest estimate of this is perhaps one that reflects the perceptions of the local residents themselves regarding the regeneration of their area, backed by reference to the statistical indicators. In relative terms, there was enough statistical evidence (see deprivation landscape in section 7.3.1) pointing to the Hulme of 1997 - 2000 as a less deprived area than that of prior to this period. The local communities also appeared to be united on this statistical account – that their Hulme of 1997-2000 was a place to be proud of in comparison with the one marred by mayhem before, and in the early, 1990s.

Taking 1997 - 2000 as the reference point, representing the time of accepted levels of deprivation (according to the residents), we see that this coincided with the period of heightened community involvement, averaging 44.25% as opposed to a mere 22% at the very dawn of the 1990s when Hulme was still a highly deprived neighbourhood. Over the same period, the (real) density of social connectivity averaged 8.64% as opposed to 5.1% in 1991-1992. This does not in any way suggest that 44.25% of community participation, 17%

density and 17.2% deprivation (unemployment) were the appropriate levels of participation, density and deprivation respectively. This would be a naïve and very precarious argument especially when dealing with a dynamic complex system. For the purpose of the study, it suffices to discover that there was evidence of contentment among the residents themselves with regard to the achievements of the regeneration activities at this time. Since the more usual case with regard to community participation levels is that of not enough involvement, it can be argued that the Hulme regeneration networks may not have had a chance of existing on the other extreme end of "too much" participation, such that it would not be feasible to search for the appropriate balance within this time range. Despite this void, it is worth noting that important insight has been carved out in understanding the evolution of social networks of urban regeneration in Hulme. Rather than grappling with the unachievable search for the fine balance in participation and density of connectivity, there is more utility to be gained from the knowledge of the enabling environment for the emergence of community groups and their networks.

The quest for the enabling environment revolved around the impetus for group formation and location. The inquiry into the former indicated that community agents of regeneration were formed on the basis of the desire to meet eight (interlinked) concerns of urban regeneration as shown in figure 7.64 above. The eight elements generally reflect the various aspects of urban regeneration as defined in contemporary literature. The study shows that the various dimensions of regeneration were served by community groups in different degrees as the agents evolve to meet the multifarious array of community needs. The differentials in the degree of community commitment are a good starting point for central (local) authorities in identifying the aspects of regeneration that need special attention and inclusion in the decision-making mechanisms on account of not being well catered for by community participants. From figure 7.64, these would include the aspects of physical/environmental conditions (item 3) and crime and security (item 4). If this kind of analysis were placed into a historical framework, it's likely that community group formation would tend to parallel the nature of the deprivation landscape of the area at different times. This is what was proven in a similar kind of investigation in figure 7.61 where the issues of discussion among community groups between 1990 and 2000 reflected the dynamics in the level of deprivation in Hulme.

On the question of community group location, the study identified four main factors that define the auspicious environment for the agents to emerge and connect, as shown in figure 7.65. The graph reveals that most community groups (33%) were associated with Hulme because the founder members are (or were) residents of Hulme. Curiously, in both cases (group formation and location), none of the agents attributed their origins to the issue of financial (or other resource) sponsorship or indeed any form of local and central government sensitisation. This is an important discovery in the thesis of this project because it serves to demonstrate that community participation in urban regeneration processes, valued as it has been proven, is not a centrally designed process but an emergent intrinsic characteristic of the community. Therefore, taking into account this fresh issue of reduced central control, the resultant enabling environment for the evolution of community networks of urban regeneration is summarised in the table below.

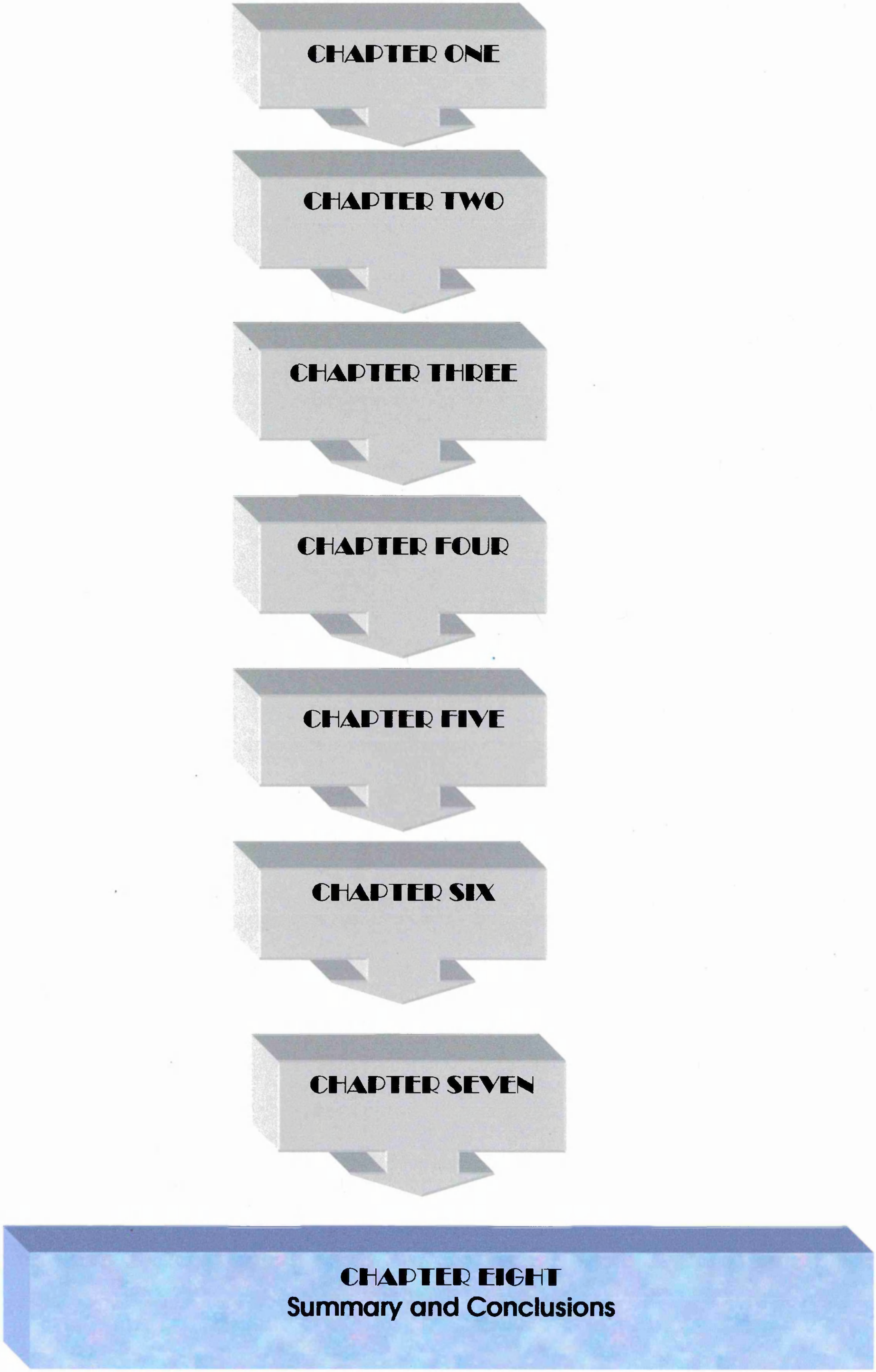
**Table 7.9 Factors influencing the emergence of community networks of regeneration**

| | |
|---|---|
| DRIVERS OF GROUP FORMATION | Education and local skills training |
| | Health and safety |
| | Environment and physical conditions |
| | Crime and security |
| | Economic progress and local employment |
| | Housing |
| | Social exclusion |
| | General community welfare |
| DRIVERS OF GROUP LOCATION | Space for interaction |
| | Locality of group members |
| | Philanthropic response to community needs |
| | Long history of establishment in the area |
| | Reduced central control |

The inclusion of the element of reduced central intervention does not, in any way, suggest that central and local governments have no role to play in the lives of the community agents of regeneration. The results of the questionnaires issued to community agents in 2002 indicated that 78% of these groups received funding from Manchester City Council and other statutory bodies. This was so despite the latter not having played a part in the creation of the organisations concerned. In short, it is now appropriate to conclude that community agents of regeneration emerged on their own without central intervention, and that the local authority only came to recognise their importance and therefore decided to support them. In other words, rather than being foundational, financial and other resource needs can only be catalytical to the sustenance (or survival) of such organic groups. The conclusion from such a background is one that directly hovers on the research hypothesis.

## 7.7 Conclusion

Urban regeneration processes are more of a subject of emergence than a designed process. The case study of Hulme has given us enough latitude to suggest that urban regeneration programmes (in this case City Challenge) that are designed at the edge of chaos stand a better chance of yielding the desired results. In keeping with the overall complexity project, such a conclusion can only come from the backdrop of a study that has considered the historical dimension of the subject matter. This study is in perfect tune with that requirement, where the evolution of multiple-agent participation in urban regeneration processes was investigated within a historical framework. Unless the historical aspects of particular urban settings is embraced, the quest for intelligent intervention will still retain its position as a great challenge to the urban regeneration decision-making instruments. To this end, this author feels entitled to argue that the complexity landscape is not a place for people who believe that the only thing that can be learnt from history is that there is nothing we can learn from history. What is being advocated for is not history for the sake of it, but history for the reasons of understanding contemporary issues of urban regeneration, which basically emphasise multiple agent participation in the decision-making processes. A scrupulous analysis of the foundation principles of the agents of regeneration and the dynamics of the ensuing connectivity is a necessary pre-requisite for securing areas of intervention. Although, based on correlation tests, local authority centrality does not appear to have a direct bearing on the emergence of community agents of regeneration, central intervention is vital in the sustenance of such civic organisations through funding and other resource needs. Since community participation is not necessarily designed, the remaining challenge for the decision-maker is to avail the enabling environment for the emergence of the agents and their subsequent connections. Community participation would then find its own balance in terms of volume of participation (quantity), density of connectivity (quality) as well as value judgements with regard to how they service the particular aspects of regeneration at different times. The areas that are under-serviced can then be appropriately taken care of by the central and local governance agencies so as to strike an edge of chaos-like balance in the system.


CHAPTER ONE
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Summary and Conclusions

# CHAPTER 8: SUMMARY AND CONCLUSIONS

## 8.1 Introduction

The final chapter of the dissertation is devoted to a critical reflection on the salient issues arising from the research. Here, the reader is taken on a brief tour of the findings of the study within the framework of the research aims, objectives and hypothesis. The chapter, therefore, begins with a synoptic overview of the research findings so as to provide a framework within which to engage in a reflective discussion on the broad research agenda. The chapter acknowledges the multidimensional difficulties that were encountered in the course of the research and, therefore, makes record of such impediments in the form of study limitations in section 8.5. It is for this reason that the chapter also closes with an itemized bill of suggested areas for future research.

## 8.2 Summary: What did the research find out?

As pointed out in the introduction above, and to answer this question, the chapter will recap on the aims and objectives of the research. As the title of the dissertation suggests, the study sought to explore the potential of the emerging science of complexity as a basis for understanding urban regeneration processes. Upon this exploratory aim, which was pursued through the case study of Hulme, was conceived a series of research questions revolving around the grand hypothesis that urban regeneration processes are more of a subject of emergence than necessarily planned processes. Pursuance of this research agenda was aided mainly by the methodological tools of social network analysis, to the extent that these are harmonious with the concerns of the complexity project.

The first of the three research objectives investigated the implications of central control in the regeneration processes of Hulme. The rationale was to assess the extent to which, and /or whether urban regeneration processes can be envisaged as complex systems. This provided a framework within which to investigate the implications of central control using the edge of chaos hypothesis, particularly as represented in Stuart Kaufman's NK landscape model. The historical narrative of the regeneration of Hulme attempted to put the subject matter on the weighing-scales of complexity theory. The roadmap to the achievement of this task involved a chain of questions revolving around the characteristic features of complex adaptive systems, particularly the edge of chaos as suggested above. The outcome of the analysis was a general ruling in favour of the (broad picture of) Hulme regeneration process as a subject of complexity rather than a necessarily planned process. It involves a multiplicity of agency, ranging from community and voluntary sector participants to central and local government departments, private sector companies, as well as quasi-non-governmental organizations. An enumeration of such agents of regeneration unveiled a total number of 132 organisations that were involved in the regeneration of Hulme between 1990 and 2002.

The agents of regeneration did not exist in isolation from each other but were actively engaged in a diversity of interactions through face-to-face meetings and various other forms of contact that have come with the communications revolution. Evidence of adaptive capacity and evolution to the edge of chaos was most vivid in the account of the regeneration processes of the 1960s to 1990. The decision-making mechanism during this time was characterised by a dichotomous relationship between local authorities on one hand and community agents of regeneration on the other. The system had become highly centralised for much of the post war years developing into a paternalistic relationship where decisions were made by the central and local authorities for and on behalf of local communities. It had, therefore, become frozen by many years of faith in this kind of top-down approach to decision-making. This was the case not only in Hulme and Manchester but also in the rest of Britain's inner cities as demonstrated in chapter four. Through the processes of interaction and mutual accommodation, the system slowly began to dissolve and eventually (in the case of Hulme) reaching an edge of chaos transition in the late 1980s to early 1990s. The "bold line" that existed between central control and community networks was reduced to a mere "dotted line" as consensus assumed hegemony over paternalism. The phase transition that characterised this process has been described by commentators (see chapter six) as the most innovative stage in the regeneration of Hulme. It was at this very innovative phase that the City Challenge programme was introduced in Hulme and other inner city areas shown in table 5.1. If one accepts the hypothesis that systems are most innovative at the edge of chaos, it should not be a coincidence that the Hulme City Challenge was described as an exemplar of urban regeneration in Britain. It was a programme (seed) that was conceived (planted) at the right time (on fertile grounds). Through a series of local action, adaptation and feedback processes, the system moved from its frozen state (of central control) to a more absorbent state – one that was eclectic enough to accommodate multiple agents of regeneration and sought to engage local communities in the decision-making processes. An important point to note, and one that is totally missed by many writers and scholars, is that no one designed this search process for the consensus (edge of chaos) that was eventually realised. It was not designed by any means of transcendental intervention but emerged from the system's response to the contingent interaction among agents and in a dynamic fashion. It is, therefore, only appropriate that the Hulme regeneration process (1960-1990) is conceptualised as a complex self-organising system that emerged to the edge of chaos in the latter half of the 1980s to early 1990s. The complexity of the regeneration networks that sprouted out of this transition phase was a subject of the second objective of the research.

In the second research objective, the study set out to quantify the multiple agent involvement in the regeneration processes so as to relate them to the outcomes of the regeneration efforts. The correlation tests involved the three social network parameters of density of connectivity, centrality of local authority participation, and the volume of community participation, each of which was plotted against changes in deprivation levels in Hulme between 1990 and 2000. The rationale was to search for an appropriate balance (edge of chaos) in the three network parameters. The study unveiled the existence of correlations between the two network parameters of density and volume on one hand and the levels of deprivation on the other. Generally, the correlation results suggested that lower deprivation levels were associated with low density networks and high volume of community participation. The investigation, however, fell short of pinning down any level within the two parameters as the appropriate balance for the system. The reasons associated with the difficulty in arriving at the critical balance of connectivity are outlined in the discussion in chapter seven. One of the suggested explanations with regard to volume is that the system might still have been moving (evolving) from the more usual case of not enough participation towards the edge of chaos. In such a scenario, it would not be feasible to engage in a conclusive search for the appropriate balance because it might well be located in future at a point in time that can not be predicted.

Despite the existence of correlations between the two network parameters and the levels of deprivation, it is important to stress that this is not an argument for a causal relationship. Mere correlation between variables does not suggest causality. Moreover, causal mechanisms in complex systems are associated with multiple variables. In such systems, it is not necessary to reduce the analyses to issues of causality because of the inherent non-linearity and emergent behaviour. It is by virtue of these emergent properties that the laws that govern complex processes take on an unpredictable and tendential (not causal) character. The fact that this denial of causality and prediction only points to tendencies within complex systems does not render it irrelevant to social reality. The approach is even a more realistic account of complex processes than one that attempts to legitimise itself by sticking to reductionism and its tired endeavours to dismantle systems and make use of *ceteris peribus* instruments to speculate on issues of causality and prediction. The utility of the tendency-oriented analysis is that there is room for an understanding of the real (whole) system through which policy intervention can be secured. The realisation, for example, that the density (and volume) of social connectivity is correlated with deprivation levels would prompt decision-makers to seek ways of tapping such connectivity even before getting to the issues of appropriate levels.

Unlike the first two objectives of the research, the third was a snapshot of the existing scenario in the regeneration of Hulme in 2002 (the time of the surveys) in terms of structure of social networks. The analysis did not seek to discover any emergent properties of the regeneration processes but concentrated much on the quest for an enabling environment for the emergence of social networks of regeneration. This was achieved through social survey techniques, including the issuance of questionnaires to the agents of regeneration and conducting interviews with key individuals who had lived in Hulme long enough to see change.

With a total number of 62 agents having been netted, through a snowballing technique (see chapter five), it was possible to use Steve Borgatti's (2000) Ucinet 6 software package for social network analysis to deduce those social network properties that can be narrowed down to the intrinsic characteristics of individual agents or groups of agents. The global properties of the networks, such as density of connectivity, were omitted from the analysis because it was appropriately felt that they have no relevance in a cross sectional analysis. The results of the surveys were generally similar to those of the network properties of 1990 to 2000 networks where the local authority departments were the most central agents judging by the degrees of connectivity or centrality. In terms of the impetus for cluster formation, as measured by clique analysis, housing associations tended to dominate the largest member cliques while the smallest cliques were dominated by community agents of regeneration. The most important part of this investigation lay in the search for the conditions that gave rise to, and sustained, the multifarious array of community networks of regeneration that existed in Hulme at the time of the surveys in 2002. This was achieved in two ways: investigating the bases of formation of the community agents of regeneration and their reasons to operate in Hulme. In terms of the former, the study unveiled eight main factors of group formation, including community welfare, interest group needs, economic progress, health and safety, local skills, housing, crime and security, and environmental issues, in that order of the percentage of groups that associated themselves with each element. The reasons for locating in Hulme revolved around the five themes of (again in order of importance): domicile of group members, philanthropic response to community needs in the area, long history of establishment, space availability in the area, and "just by accident". It was recognised that these bases of group formation and location were not mutually exclusive as they can be traded across each other. The utility of the knowledge of these foundation and location principles of local communities can best be understood in conjunction with the findings of the second research objective. If the density and volume of social connectivity are correlated with deprivation levels, the challenge to the decision-maker is how to facilitate the emergence of such (mainly informal) social networks. It becomes imperative, therefore, to conclude that the starting point is to make use of the framework of group formation and location and seek to channel resources towards the provision of the enabling environment such as space for social intercourse and other factors identified above. Similarly, it can be argued that in the midst of the enabling environment, the social networks of regeneration would find their own appropriate balance in terms of density of connectivity and volume of agents. This can only take place within a system that can be conceptualised in terms of complexity and that is why the study does not hesitate to make a conclusion based on that notion.

## 8.3 Conclusions and hypothesis evaluation

In the pursuit of the broad research agenda, the study unearthed enough evidence to support the hypothesis that urban regeneration processes is more of a subject of emergence than necessarily a product of artificial design. Because of the case-study orientation of the study, the reader is reminded that, though tempting, the legitimacy of this argument does not extend beyond the boundaries of the regeneration processes of Hulme between 1960 and 2002. The most conclusive evidence of the complexity test was drawn from the historical narrative of the regeneration of Hulme, particularly in the assessment of the evolution of decision-making processes on the NK landscape model. The analysis demonstrated how decision-making in the affairs of Hulme between 1960 and 1990 evolved from the centrally-controlled regime to a more eclectic one, with the latter producing one of the exemplars of urban regeneration initiatives in Britain in the early to mid 1990s. The study demonstrated that the edge of chaos in Hulme's decision-making mechanisms represented a fertile domain in the regeneration processes. This is a special kind of balance in decision-making processes, where there was neither too little nor too much of central control, with the quantification and/ or definition of each extreme being a function of the system itself in the midst of the enabling environment for emergent behaviour. The incidence of too little (or lack of) central control is an emblem of the politico-economies of liberalism whose efficacy in the delivery of public goods was questioned even as early as the 19th century. On the alternative extreme end is the centralised system of governance whose multiple dimensions of failure is a subject of platitude as chapter three demonstrated. In between these two extremes of order and chaos is the edge of chaos – an ideal transition phase for innovation.

Thus, through the edge of chaos principle, the complexity project offers an insightful guide to the understanding of urban regeneration processes. The starting point is an appreciation and accommodation of the multiplicity of agents involved in the regeneration processes, understanding the nature of their interactions, and having the courage to recognise that there is no problem that remains standing at the edge of chaos. Many writers and commentators have attributed the success story of the Hulme regeneration solely to the achievements of the City Challenge programmes without a well thought out examination of the historical context of the platform upon which the delivery of the programme was conceived. The consensus building that characterised decision-making in the regeneration of Hulme in the late 1980s to early 1990s was a product of emergent properties of the system dating as far back as the conception and completion of the deck access housing in the late 1960s and early 1970s. The search for this edge of chaos was not transcendentally designed by any central planning mechanisms, as these authorities in fact exhibited strong reluctance to accommodate the aspirations of the local communities for much of the post war years. It might be worthwhile to remind the readership that the very solutions (such as demolition of deck access housing) that were being suggested by the local communities and persistently rejected by the local and central planning authorities for a long time are the ones that were embraced by all stakeholders at the zenith of consensus and even served as the foundation for the new Hulme.

Although Hulme regeneration as a system evolved to the edge of chaos in the late 1980s and early 1990s, there was no guarantee that the system would stay in that state for a long time and in any case, this need not be the case in complex systems. This is because the edge of chaos is constantly changing and highly unpredictable[1]. The inability to ascertain critical levels of connectivity and volume of participation from the 1990s social networks of regeneration may also be attributable to the dynamic nature of the system as well as the notion that the system might still have been evolving to the edge of chaos (in terms of connectivity and volume) over the reference period. In the face of system dynamics and unpredictability, the primary challenge to the decision-maker is reduced to that of availing the enabling environment for the emergence of social networks of regeneration.

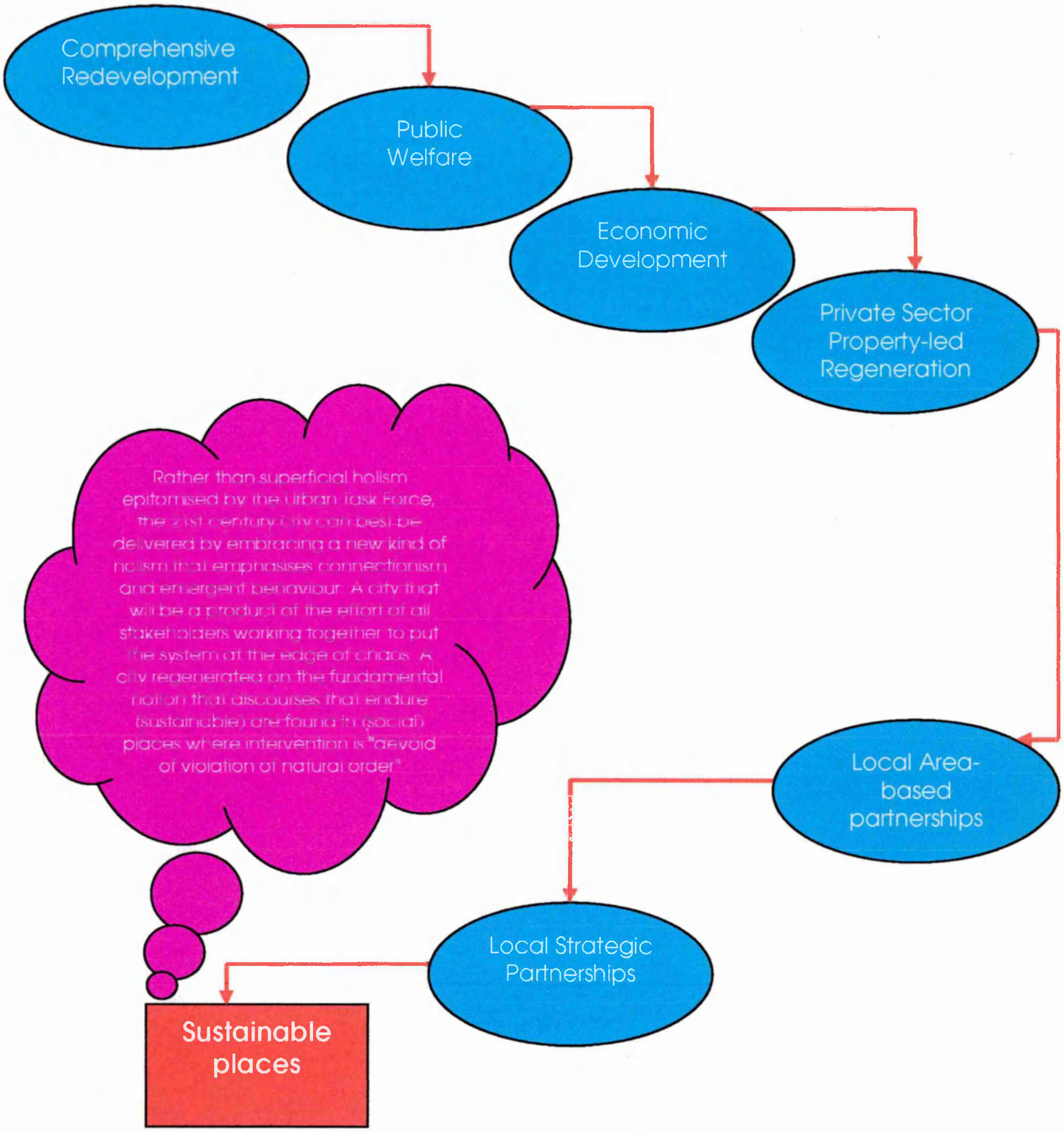
Hulme is one area that has been associated with rich social capital – one that cannot be paralleled by many of Britain's inner cities. Consequently, the area has become an attractive proposition for studies in community involvement in the regeneration processes. The current study went a step further to scan through the type of environment that bred and sustained this kind of social capital and came up with multiple factors hinging on forces of group formation and location. It is in the midst of that enabling environment, that the social networks of regeneration assume emergent properties. Since the networks themselves are associated with the salutary effects in urban regeneration, a further evaluation of the research hypothesis and its attendant research questions should point out that: Urban regeneration processes are a subject of complexity whose programmes should be designed in the face of that complexity; and that there is a critical level of central control that allows for maximal innovation in urban regeneration decision-making processes.

[1] Anecdotal evidence suggests that plans for new apartment blocks in Hulme and described by one councillor as a return to the brutal were approved in 2002 by Manchester City Council.

As the study comes to a close, we pose an important question regarding the utility of the study: what are the implications of the findings of the research in planning, urban regeneration or just policy-making? The single answer is that through complexity theory, the study secured fundamental insight into the understanding of the urban system in general and urban regeneration processes in particular. The complexity project has opened a new window through which to view the urban problem. In particular, the principles of self-organisation and the edge of chaos are so robust and irresistible as they offer a new way of planning – one that is aware of the complexity of the urban system and allows the overall plan to emerge from the system. Without assuming generality of the findings from the lone case study of Hulme, a redefinition of the future of urban policy and practice in Britain, as illustrated by the University of Aberdeen and Kevin Murray & Associates (2004)[2] would, therefore, be necessary as shown in figure 8.1 below.

[2] The University of Aberdeen and Messrs Kevin Murray & Associates published a report in which they traced the landmarks of Britain's urban policy and epilogued by suggesting that report of the Urban Task Force holds the future for urban policy.

**Fig. 8.1 New directions for urban regeneration policy and practice**




Complexity theory's latent quest for intervention without violation of natural order is not only compelling but also brings us closer to a crossroads of deciding whether the way forward in planning (and urban regeneration) is to build footpaths where people actually walk or continue to impose those patterns on people through rational comprehensive planning and its tired decision-making instruments. This is an essential contribution to the body of knowledge not only in the field of urban studies but in the understanding of society in general.

## 8.4 Contributions of the study

This account of the value of the study is a follow-on from the research originality claims outlined in chapter one, where the thesis was put into the context of past research on the broad subject. The contributions of the research to the body of knowledge can be summarised into the three themes of holism, decision-making, and level of community involvement in urban regeneration processes. The three themes are hardly new but, through complexity theory, the study has redefined them in a manner that makes them unique contributions to the practice of urban regeneration and the burgeoning literature on urban studies.

### 8.4.1 Holism in urban regeneration

One of the important contributions of the study is embedded in the defiance of the reductionist paradigm. Past research has tended to single out particular aspects (e.g. industrial networks or fine art) as the focus of analysis even when such aspects are heavily interwoven into a complex web of interacting components that drive the whole system. The practice has been recognised by proponents and exponents of complexity theory as unreliable in understanding problems of the real world because it leads to partial insight into what are otherwise complex problems. This need for a holistic approach to urban regeneration has now been recognised by some researchers and scholars. The Urban Task Force of Lord Rogers (1999) was itself hailed for advocating for this kind of approach to the urban problem, and even attracted a band of followers under the general theme of finding "joined-up solutions to joined-up problems". Attractive as it appears, this particular school of holism lacks the crucial aspect of the need to view the urban problem from an evolutionally perspective that was championed in this study. Many studies of urban change are indeed mere snapshots of the existing situation at particular points in time and, therefore, do not give us satisfactory insight into the dynamics that drive whole systems. There was also a tendency in the Urban Task Force's report to focus on physical design as a panacea to the urban problem, a fallacy that has been detected over the years. Consequently, this research departed substantially from both reductionism and superficial holism by taking a holistic approach founded on an emphasis on emergent networks in understanding urban regeneration. Instead of isolating a single aspect of regeneration (e.g. economic, social, physical, or environmental), the study recognised that these are interconnected elements that cannot be understood in isolation from each other. The result of such a longitudinal analysis in the case study of Hulme was an understanding of effective decision-making in urban regeneration

### 8.4.2 Decision-making at the edge of chaos

Decision-making is the single most important aspect in urban regeneration processes. Getting it right in the totality of the regeneration programmes is highly sensitive to the initial design considerations of the processes. The contribution of the study in this regard rests on the discovery that the Hulme regeneration programme (in this case City Challenge) that was conceived at the most innovative stage (the edge of chaos) was the most successful regeneration initiative ever attempted in the area. The consensual premise upon which the City Challenge programme was initiated was not an artificial platform constructed by merely pooling together the various stakeholders. It was a natural social landscape that had a history dating back to the 1970s and evolved over the years, through contingent processes of community activism against a closed rigid system of central control. Through the edge of chaos, as applied to the regeneration of Hulme, the study has unveiled an important analytical tool for urban regeneration processes, which would potentially enable a critical examination of the socio-spatial landscape of the areas that need regenerating. Through a combination of complexity theory and social network analysis in the regeneration of Hulme, the study also unveiled a historical framework that enables identification of the least and the most active agents of regeneration. This is an important point of intervention in that it potentially serves as a guide towards sensitisation of community networks in the quest for an appropriate amount of social capital and levels of involvement in urban regeneration processes.

### 8.4.3 Level of civic involvement in urban regeneration

The third avenue of contribution of this research relates to questions of community involvement such as the appropriate volume of agents in urban regeneration processes and the level of connectivity (or informal institutional thickness) that is desirable for innovation. Past researchers have not addressed these important questions. For example, Putnam (2000) dexterously illustrated the correlation between the dwindling civic involvement of the American community on one hand and the socio-economic standing of these communities, but fell short of hypothesising the appropriate level of civic-ness. The British government has recognised this issue as a concomitant for successful regeneration processes. In 2000, the Department of Environment, Transport and the Regions (DETR), now the Office of the Deputy Prime Minister, advertised on its website a research proposal whose main objective was to:

> "...find out the most effective ways of involving local communities (*as agents*) in regeneration...and identify what level of community involvement is appropriate in urban regeneration processes" (DETR, 2000).

The proposition implicitly suggests that there exists a finite level of community participation that is appropriate for urban regeneration programmes to be successful. A similar argument was earlier put forward by the Edinburgh Scottish Homes and Organisation in a study on community participation in regeneration processes using case studies of Muirhouse, Greater Pilton and Hulme. One of the comments coming out of their study was that:

> "... it must be better to have...much participation than the more usual case of not enough. Nor is it likely to be clear...at what point enough participation becomes too much. It does suggest [however] that there is probably a fine balance and that relatively straight forward, rather than overly complex, participation structures may be more appropriate, particularly those which are flexible enough to adjust the degree of consultation as regeneration processes unfold" (Carley, 1995:57).

The researcher could not trace the progress (if any) of the DETR proposed research and there was no indication of a similar kind of research at the time of writing. The report of the Edinburgh Scottish Homes and Organisation appears to have remained at a hypothetical and speculative level with regard to the appropriate fine balance in community participation in the regeneration processes. In this research, the fine balance in both participation levels (quantity) and connectivity (quality) were explained by the edge of chaos principle and the embracement of the tendential (rather than causal) nature of findings from studies of social complex systems. Apart from the issues of appropriate balance, another important contribution of the research in this regard is in the reaffirmation of the salutary effects of social networks in achieving the various goals of socio-economic progress. Robert Putnam's (2000) exposition of the crucial correspondence between the decline of social capital and the economic lives of Americans received wide acclaim at home and abroad, to an extent of even winning him a *tête-à-tête* with then president of the United States of America, Mr. Bill Clinton. Contemporary literature on development economics is equally replete with references to the World Bank's subscription to the value of social capital in fostering sustainable economic development (Moobela, 2003). The study has, therefore, contributed to this burgeoning literature by translating Hulme's social capital (through volume and density of connectivity) into a quantifiable positive virtue of urban regeneration processes.

The overall contribution of the research can, thus, be viewed from two angles. First, the study represents a fresh addition to the fast expanding avenues in the application of the new science of complexity. Second, it is a contribution to the many ways of interpreting the urban system and conceptualisation of the urban problem. Although the research is critical of certain schools of thought in urban studies (see chapter 3), it is not a claim to debase existing theory as such a task is neither desirable nor attainable at the level of this study, which had its own range of limitations.

## 8.5 Limitations of the study and areas for future research

The limitations of the study are, first and foremost, embedded within the very nature of the subject matter of social complexity research. Its rejection of the analytical method exposes it to a high level of noisy elements and scepticism from those who uphold the "anything goes" argument. In any study that sets-off at an exploratory angle, there likely to be multiple dimensions of hurdles along the way to the achievement of the research aims and objectives. It is neither necessary nor possible to enumerate all the minute sources of study limitation in this report and as such only the most outstanding ones are outlined. Having waylaid many of the would-be limitations of the study in the methodological framework, the limiting factors for this research narrowed to the three themes of reliance on archival records, scope, and technical expertise. To some extent, these are probably common problems in social research in general because, as Byrne (1998: 1) suggests:

> "...it is a common place to say that the social world has been tricky territory for scientific investigation, precisely because it is complex, whereas the methods and forms of understanding generally employed in 'science' are absolutely dependent on things being sorted out in simple terms."

The use of archival records in capturing emergent properties in social networks of urban regeneration has been identified by the study as the most reliable technique over such timescale as 1960 to 2002. Though, indispensable, this technique also raises questions of accuracy especially in the face of the changing patterns of communication networks. The burgeoning culture of electronic communication, for example, is said to be widening the physical gap between people and negating the very essence of physical meetings. In the absence of such meetings, there is no written records (minutes) and thus no uniform means of measuring the evolutionary dynamics of social relations. Such are the harsh realities of social science research canons as demonstrated by Byrne (1998) in the above quote. This could be the reason why many researchers have quite often resorted to social simulation in order to secure constant conjunctions and avoid the noisy elements inherent in real systems, which approach did not find room in this study.

The greatest limitation of the study is perhaps in its single case study approach to the project. The original scope for the research was broader than the single case study of Hulme, which approach should have ideally provided for a comparative analysis of the evolutionary dynamics inherent in the regeneration processes of different inner city areas of Britain. This would also have, to some extent, provided enough authority and a platform upon which to generalise the findings of the research within the project of complexity. For reasons outlined in chapter five, this task was abandoned in favour of a single case study approach in which Hulme emerged as a sole test case. Thus, the findings and conclusions presented in the report should not be construed as an all-encompassing analytical tool for urban regeneration processes anywhere outside the socio-spatial landscape of the Hulme regeneration processes between 1960 and 2002. The second dimension of the study limitation hovering on the question of scope is that the study placed greater emphasis on the informal social networks of regeneration, with very little attention to the strategic level. Although driven by the concerns of complexity theory's inclination towards organic emergent networks, there is perhaps a certain measure of complexity that needs investigating within the formal institutional networks that would help in the analysis of urban regeneration at a strategic level. Apart from the demotion of the comparative approach in the study (see chapter five), the broad research agenda was overshadowed by the harsh realities of cost implications in terms of material and time resource constraints. This, coupled with the hurdles of securing technical expertise, had a negative effect on the delivery of the research. Constructing a formidable research advisory team is not the easiest thing to do when dealing with a theory, like complexity, that is still unfolding from its embryonic stage. Many people in academia and the research environment are still so heavily enmeshed within the traditional approach to research that it is difficult to find those that have embraced the complexity project with its fascinations. It is even more difficult to find one who appreciates the (potential) application of the theory into, yet another elusive subject matter of, urban regeneration and /or the understanding of cities in general. At its initial (registration) stage, the research, therefore, encountered problems of securing technical research advisors that would meet the minimum requirements as prescribed by the awarding body (Sheffield Hallam University). The impact of these procrastinations was a delay in the registration process and consolidation of a well-defined direction for the research, which was only completed upon nomination of a research advisor from abroad.

Despite these obstacles, there is also a positive side of the research process that ensured that the research was successfully conducted and completed to the extent of making the contributions itemised in section 8.4 above. There were numerous feedback mechanisms that were translated into motivational effects for the smooth continuation of the study. Central to these pull-and-push factors was the opportunity to observe the pattern of the research project as it emerged from a small list of mere research objectives into a complex analytical tool for urban regeneration processes, at least as this applied to the case study of Hulme. The opportunities for engagement in scholarly activities and interaction with professionals were an equally stimulating experience. Attendance, speaking, and presenting papers, at various conferences and seminars across the United Kingdom and abroad was not only a motivating factor but also provided a relative evaluation mechanism, in which it was possible to relate the research project with similar work being undertaken by numerous other researchers. That is why it is also important to stress that the study does not claim to be exhaustive or conclusive of the issues raised by the research. Further research would need to be conducted to develop these ideas in the different spheres of the built environment research.

## 8.6 Recommendations for future research

In proposing areas for future research, it is important to touch on the subject that should ideally have come right at the beginning of the report rather than at the end: the origins of the research questions behind the thesis of this project. The reader might be interested to note that antireductionist questions started to manifest themselves in the researcher's mind much earlier than the conception of the research project in October 2000. It all started in 1998 whilst the researcher was working as a Property Valuation Surveyor in private practice in his home country in Zambia when important questions regarding the numerous assumptions in the assessment of Open Market Value began to emerge. These assumptions, which are still heavily relied upon in valuation practice, seem to be out of touch with reality and therefore do not reflect the operation of the real property market. Do we need such a lengthy list of assumptions? Is it an expression of too high a desire to predict (experimental method)? Is it one way of recognising the complexity[3] of the system (property market)? Whilst these far reaching questions were still hanging, complexity theory found its way into the researcher's ideological vocabulary and appeared to hold the potential answers to the important questions. Thus, the commencement of this research project was one way of seeking to quench the researcher's thirst for a new way of understanding complex systems. However, the study has only managed to scratch the subject matter of the potential of complexity theory in the built environment, and as such, the bulk of the research agenda is still yearning to be explored. That is why the first item on the agenda for future research is one that proposes complexity theory in the understanding of housing (and the wider) property market, whose behaviour has quite often produced surprises to professionals working in this field. It planners have raised questions of why, no matter how well they plan, things still turn out different from what they anticipated, then property professional should equally begin to question the efficacy of their interpretative tools in the face of notoriety of the property market to be harnessed into our own predictive models. Planners (at least some) have suggested complexity theory and this writer feels entitled to make the same proposal for the analysis of property markets. Do property markets involve multiple agents and exhibit complex adaptive behaviour? Coming back nearer to the concerns of the current study, it would be necessary to undertake a comparative assessment of the evolutionary dynamics of urban regeneration processes across regional boundaries, which would have the utility of providing a much wider scope for validating the conceptual framework established for this study. Housing. In broad terms, there is a compelling case for the adoption of

[3] The term complexity was at this time used to refer to complicatedness

this new science in many facets of the built environment where evidence suggests total failure on the part of the conventional, prediction based models in understanding the urban system.

Although the above suggests that more work needs to be conducted in the line of this research than what has been achieved, this should be anticipated in a study that was merely:

**"Exploring the Potential of Complexity Theory in Urban Regeneration Processes"**

Moreover, it is equally gratifying to note that the study has stimulated debate and paved way for further research that should see urban regeneration processes rediscover the landmarks of the lost innocence of the city as we stand at the foot of the 21$^{st}$ century and prepare to take the next steps.

# REFERENCES

Allen, P. M. (1997): **Cities and Regions as Self-organising Systems: Models of Complexity,** Gordon and Beach, Reading, England.

Allmendinger, P. (1999): "Planning in the Future: Trends, Problems and Possibilities", in Allmendinger, et al (Eds): **Planning Beyond 2000**, John Wiley & Sons, England

Arrow, et al, (2000): **Small Groups as Complex Systems: Formation, Development, Adaptation,** Sage Publications, London

Ashby, W. R. (1962): "Principles of Self-Organising Systems" in Foerster and Zopf, G.W. (eds): **Principles of Self-Organisation**, Pergamon, New York

Arthur W, B (1990): Positive feedback in the economy, **Scientific American,** February

Atkinson R. and Moon G. (1994**): Urban Policy in Britain: The City, the State and the Market,** Macmillan, London

Auyang, S. Y. (1998): **Foundations of Complex System Theories in Economics, Evolutionary Biology and Statistical Physics,** Cambridge University Press, Cambridge

Axelrod, R. and Cohen, M. D. (1999): **Harnessing Complexity: Organisational Implications of a Scientific Frontier,** The Free Press, London

Balchin, P.N. and Bull, G.H. (1987): **Regional and Urban Economics,** Harper and Row, London

Benyon, J. and Solomos, J. [Eds] (1988): "The Simmering Cities", **Parliamentary Affairs,** 41: 402-22

Bertalanffy, L. (1968): **General System Theory: Foundations, Development, Applications,** Allen Lane the Penguin Press, London

Bhaskar, R. (1975): A **Realist Theory of Science**, Western Printing Services, Bristol

Bhaskar, R. (1998): **The Possibility of Naturalism: A Critique of the Contemporary Human Sciences**, Routledge, London.

Blaikie, N. (1993): **Approaches to social enquiry,** Polity Press, London

Blair, T (2004): Foreword to the Code of Practice on Consultation, Regulatory Impact Unit, Cabinet Office

Blowers, A, et al, (1982): **Urban Change and Conflict: An Interdisciplinary**

**Reader**, Harper & Row in association with the Open University Press, London

Blowers, A. et al, (1974): **The Future of Cities**, Hutchinson Educational in association with The Open University Press, London.

Borgatti, S. P. et al (1999): **Ucinet 5, version 1**, Natick: Analytic Technologies, University of Califirnia at Irvin

Borgatti, S. P. et al (1999): **Ucinet 6, version 1**, Natick: Analytic Technologies, University of Califirnia at Irvin

Bryant, C. G. A. (1985): **Positivism in Social Theory and Research**, MacMillan, London

Burt, R. S. (1992): **Structural Holes**, Cambridge, Harvard University Press, MA

Byrne, D. (1998): **Complexity Theory and the Social Sciences: An Introduction,** Routiledge, London

Cameron, S. (2001): Neighbourhood Management: Linking Neighbourhood Renewal and Urban Renaissance, Paper Presented to the Conference on Area-based Initiatives in Contemporary Urban Policy, University of Newcastle Upon Tyne

Campbell, M. (2001): Beyond the Fragments? Growth, Jobs and Inclusion, Paper presented to the "Joined-Up Regeneration Conference" held at Sheffield Hallam University on 22 June 2001

Campbell, S and Fainstein, S (1996): **Readings in Urban Theory,** Blackwell publications, Oxford.

Capra, F. (1982): **The Turning Point: Science, Society, and Rising Culture,** Simon and Schuster, New York.

Carley, M. (199): A community Participation Strategy in Urban Regeneration: Case Studies in Muihouse and Greater Pilton, Edinburgh, and Hulme-Moss Side, Manchester, Edinburgh Scottish Homes Organisation, Research and Innovation, Edinburgh

Carley et al (2000): **Urban Regeneration through Partnerships: a Study of Nine Urban Regeneration Regions in England, Wales and Scotland,** Policy Press, Bristol.

Castells, M. (1977): **The Urban Question,** Edward Arnold, London

Castells, M. (1978): **City, Class and Power**, Macmillan, London

Chadwick, G. (1971): **A Systems View of Planning: Towards a Theory of Urban and Regional Planning Process**, Pergamon Press, Oxford

Cilliers, P. (1998): **Complexity and Postmodernism: Understanding Complex Systems**, Routiledge, London

Cohen, L. and Manion, L. (1982): **Multicultural Classrooms: Perspectives for Teachers**, Routledge Kegan & Paul, London

Crocker, S and Rerkins, B (2000): Economic Regeneration: A study guide for MSc. in Urban Regeneration, Sheffield Hallam University.

Davies, W and Bulter, E. (1986): **The Freeport Experiment,** ASI, London.

Dawkins, R. (1986): **The Blind Watch Maker**, Longman, London

Dent, R.B. (1999): Complexity Science: A Worldview shift, **Emergence**, 1 (4) 5-19

DETR (2001): Research projects available for funding, Department of Local Government, Transport and the Regions (Website visited in 2001 at www.housing.dltr.gov.uk/research/)

DETR (1998): **Evaluation of the Single Regeneration Budget Challenge Fund: A Partnership for Regeneration - An interim Evaluation,** Regeneration Research summary.

DETR (2000): Indices of Multiple Deprivation 2000, Summary No. 31: Ward Level Ranking, Department of Environment, Transport and the Regions.

DETR, (2001) **Housing and Regeneration Newsletter** 1999/00

DOE (1988): **City Grant Guidance Notes,** HMSO, London.

Donnison, D. (1967): **The Government of Housing,** Penguin, Harmondsworth.

EIUA, (1997): **Hulme City Challenge - Did it work?** Liverpool John Moores University and the European Institute for Urban Affairs

Fainstein, S. and Campbell, S. (2001): **Readings in Planning Theory**, Blackwell Publishers, Oxford

Forrest R. et al (1979): "The Inner City: In Search of the Problem", **Geoforum,** 10: 109-116

Freeman, L.C. (2001): Social Network analysis (Website visited in January 2001): www.heinz.cmu.edu/project/INSNA/na-inf.html

Freeman, L.C. (1979): Centrality in Social Networks: 1. Conceptual clarification, **Social Networks**, 1: 215-239

Gell-mann, M (1994): **The Quark and the Jaguar, Adventures in the Simple and the Complex,** Little Brown & Co. Abacus, London.

Gillies, J. (1999): A complex Systems Model of the Adaptability of Industrial Networks, PhD Thesis submitted at Cranfield University.

Gleik, J. (1993): **Chaos : Making a New Science,** Abacus, London

Graham, S. and Marvin, S. (2001): **Splintering Urbanism: Networked Infrastructure, Technological Motilities and the Urban Condition**, Routledge, London.

Granovetter, M.S. (1973): The Strength of Weak Ties, **American Journal of Sociology**, 78: 1360-1380.

Green, C. N. (2001): From Factories to Fine Art: The Origins and Evolution of East London's Artists' Agglomeration, 1968 – 1998, Thesis submitted in partial fulfilment of the requirements of the University of London for the Degree of Doctor of Philosophy

Hall, P (1977): "Green Fields and Grey Areas" Proceedings of Royal Town Planning Institute Annual Conference, RTPI, London

Hall, P. (1998): **Cities in Civilisation: Culture, Innovation, and Urban Order,** Weidenfield and Nicholson, London

Hanon, P. (1977): War on Want, in Hulme Peoples Rights Centre (1978): **Inner City Crisis, Manchester's Hulme**, Hulme Peoples Rights Centre, Manchester.

Harvey, D. (1973): **Social Justice and the City,** Edward Arnold, London

Higgins, J. et al (1983): **Government and Urban Poverty,** Blackwell, Oxford

Hill, M. R. (1993): Archival Strategies and Techniques, **Qualitative Research Methods Series 31**, A Sage University Paper.

HMSO (1995): **Aspects of Britain Urban Regeneration,** HMSO, London.

HMSO, (1977): **Policy for the Inner Cities,** Cmnd, London

HMSO, (1990): **Hulme Study: Stage One: Initial Action Plan,** HMSO, London

HMSO, (1995): **Manchester: 50 Years of Change,** HMSO, London

HMSO, (1999): **Local Government Act 1999,** The Stationary Office, London

Holland J. H (1995): **Hidden Order: How Adaptation Builds Complexity,** Reading, Addison Wesley, MA

HPRC, (1985): Deck Access Disaster: Report of the Hulme Conference held at Birley High School, Hulme, Manchester on 22 February 1985

HPRC (1997): **Inner City Crisis, Manchester's Hulme**, Hulme Peoples Rights Centre, Manchester.

HRL (1994): **Rebuilding the City; A guide to Development in Hulme,** Hulme Regeneration Limited, Manchester.

Hulme Views Project, (1990): **Hulme Views: Self Portraits: Writings and Photographs by Hulme People, Hulme Views Project,** Manchester

Johnson, J. (2001): **The "Can You Trust it?" Problem of Simulation Science in the Design of Socio-technical Systems: Modelling Behaviour of Complex Social Systems**, John Willey & Sons, London

Johnson, T. et al. (1998): **What Works - Learning the Lessons: Final Evaluation of City Challenge,** KPMG for DETR; London.

Katz, D. and Kahn, R.L. (1966): **The Social Psychology of Organizations**, John Wiley & Sons, London

Kauffman, A (1993): **The Origin of Order: Self-organisation and Selection in Evolution,** Oxford University Press, NY

Kauffman, A (1995): **At Home in the Universe: Searching for Laws of Self-organisation and Complexity,** Oxford University Press, NY

Kay, J. et al. (1999): "An Ecosystem Approach for Sustainability: Addressing the Challenges of Complexity" Futures, 31 (7): 721 - 742

Kitchen, T. (1997): People, Politics, Policies and Plans: The City Planning Process in Contemporary Britain, Paul Chapman Publishing Limited.

Kitchen, T. (1999): "Consultation on Government Policy Initiatives: The Case of Regional Planning Guidance, Planning Practice and Research", 14 (1): 5 - 15

Knoke, D and Kuklinski, J.H (1982): **Network Analysis**, Sage Publication, London

Krackhardt, D (1992): The Strength of Strong Ties: The importance of Philos in Organisations, in, Nohria, N. and Eccles, R.G. (Eds): **Networks and Organisations: Structure, Form and Action,** Harvard Business School Press, Boston, MA

Krebs, V. (2002): An Introduction to Social Network analysis, available at: www.orgnet.com/sna.html

Lamming R (1993): **Beyond Partnerships: Strategies for innovation and**

**Lean Supply,** Prentice Hall, London.

Laszlo, E. (1996): The Systems View of the World: A Holistic Vision for our Time, Hampton Press, London

Lawless, P (1979): **Urban Deprivation and Government Initiatives,** Faber and Faber, London.

Lawless, P (1980): Partnerships: A critical Evaluation, **Local Government Studies,** 6:21-39

Lawless, P (1986): **The Evolution of Spatial Policy,** Pion, London.

Lawless, P. (1989): **Britain's Inner Cities,** Paul Chapman Publishing Ltd. London.

Lawless, P. (1996): The Inner Cities: Towards a new agenda, **Town Planning Review,** Vol. 67 No. 1: 21 - 43.

Lawless, P. (2001): Community Economic Development in Urban and Regional Regeneration: Unfolding potential of justifiable scepticism? **Environment and Planning C**: Government and Policy 2001, 19: 135-155

Lawless, P. and Raban, C. (1986): **The Contemporary British City,** Harper and Row, London.

LeGates, R. T. and Stout, F (2000): **The City Reader**, Routiledge, London

Lewin, R (1995): **Complexity: Life on the Edge of Chaos,** Phoenix Paperbacks, London.

Lucey, N. (1973): The Effect of Sir Ebenezer Howard and the Garden City Movement on Twentieth Century Town Planning, Rickmansworth, Hertfordshire.

Lyotard, J. F. (1984): **The Postmodern Explained,** University of Minnesota.

Makepeace, C. (1995): **Looking Back at Hulme, Moss Side, Cholton on Medlock and Adwick**, Willow Publishing, Manchester.

Machester Evening News (1939): "New Housing in Hulme", 1 January 1939

Machester Evening News (1960): "Bloomsbury and Bath in Hulme", 1 January 1960

Machester Evening News (1989): "Flats Squalor: Out of Control – Estate Has Become Unmanageable, admits City Boss", 1 January 1960

Manchester Home Finders (Website visited in 2003): Location map of Hulme, available at: http://www.manchesterhomefinder.org/hulme/hulmem.htm

Manson, S. M. (2001): Simplifying Complexity: A Review of Complexity Theory, **Geoforum**, 32, 404-414

Marr, C (2004): Planning Bill finally becomes Act, **Regeneration and Renewal Magazine**, pp 5, 21 May 2004

Martinez-Fernandez, M.C. (1999): "The Network perspective in Regional Regeneration: An organic Analysis of the Hunter Regional Network for Economic Development," Paper presented at the 23rd Annual Conference of the Australia and New Zealand Regional Sciences Association International, Newcastle (Australia) 19-22 September 1999.

Mawson, J. et al, (1995): The Single Regeneration Budget: The Stock take, Centre for Urban and Regional Studies, University of Birmingham, Birmingham.

MCC (1997): **Manchester, Making it Happen: Planning and Environmental Health Handbook,** Manchester City Council, Burrows Communications Ltd, Surrey

MCC, (1993): Hulme Ward Profile, Planning Studies Group, Manchester City Council, Manchester

MCC, (1994): Hulme City Challenge Annual Monitoring Report 1994, Planning and Environmental Helath Department, Manchester City Council, Manchester

MCC, (1995): Hulme City Challenge Annual Monitoring Report 1995, Planning and Environmental Helath Department, Manchester City Council, Manchester

MCC, (1996-1999): Manchester Matters: Economic, Unemployment and Welfare Benefits Bulletin, Technical Services Department, Manchester City Council, Manchester

MCC, (1999): Planning Studies Information Note – Welfare Benefits Trends, October, 1999, Planning Studies Unit, Manchester City Council, Manchester.

MCC, (2000): 1998 Local Census Fact Sheet, Planning Studies Unit, Manchester City Council, Manchester.

McCarthy, D. (2000): **Complexity Theory and Planning: Searching for Common Ground and New Insights**, The Faimily Firm Institute, MA

McKelvy, B. (2001): Energising Order-creating Networks of Distributed Intelligence: Improving the Corporate Brain, Forthcoming, **International Journal of Innovation Management,** June 2001.

McMillan, E. (2001): An Introduction to Nature's Toolbox, Paper presented to a conference on "Using New Science for Business Success: Ideas and and Practice from Nature's Toolbox", held at the Open University on 6 June 2001

Moobela, C. (2003): Gated Communities: Violating the Evolutionary Pattern of Social Networks of Urban Regeneration? Paper presented to the conference on "Gated communities: Building social divisions or safer communities?" held at the University of Glasgow on 18 & 19 September 2003

MSHP (Moss Side & Hulme Partnership website visited in March 2003), available at http://www.mshp-manchester.org.uk/

Newstart, [Regeneration Magazine editorial] (2004): "Scots Planning Re-think set to offer New Appeal Rights", 6 (241), 16 April 2004

Noble, M. et al (2000): "Index of Deprivation Review: Measuring Multiple Deprivation at the Local Level", University of Oxford, Department of Applied Social Studies and Social Research

ODPM (Office of the Deputy Prime Minister website visited in March 2004): Housing Market Renewal Pathfinders, available at www.odpm.gov.uk

ODPM (website visited in May 2003): Local Government White Paper "Modern Local Government – In Touch with the People, 1998, available at www.odpm.gov.uk

ODPM, (Website visited in 2004): "New Dawn for Planning as Flagship Reforms receive Royal Assent", News Release 14 May 2004, available at: http://www.odpm.gov.uk/pns/DisplayPN.cgi?pn_id=2004_0124

ONS (Office for National Statistics website visited in February 2003): 2001 Census Data. www.statistics.gov.uk).

Pascale, R.T. et al. (2000): **Surfing the Edge of Chaos: The Laws of Nature and the New Laws of Business,** Texere, London.

People Hofstra Education: Location Theory, (People Hofstra Education website visited in 2003) available at http://people.hofstra.edu

Portes, A. (1998): Social Capital: Its Origins and Applications in Modern Sociology, **Annual Review of Sociology,** 24: 1-24

Portugali, J. (2000): **Self-organisation and the City,** Springer-Verlag, Berlin

Price, I and Shaw, R. (2000): **Shifting the Patterns: Breaching the Memetic Codes of Corporate Performance**, Chalford Management Books, Gloucestershire.

Price, I. (in Press): **Complexity, Memetics and Reality: A New Science of Organisations or not?** In Safi, S. and Button, W. (2000): **Chaos, Complexity**

**and Management**, Routledge, London

Putnam, R.D. (2000): **Bowling Alone: The Collapse and Revival of American Community,** Simon and Schuster, London

Ratcliffe, J (1996): **Town planning and Real Estate Development,** Routiledge, London

Reed, M. and Harvey, D. (1992): The New Science and the Old: Complexity and Realism in the Social Sciences, **Journal for the theory of Social Behaviour,** 22: 353-373

Roberts, P et al (2000): **Urban Regeneration, a Handbook,** British Urban Regeneration Association, SAGE Publications, London

Rogers, R. (1999): **Towards an Urban Renaissance: The Report of the Urban Task Force,** E and FN Spon, London

Runnion, J. 2002): "Complexity Theory", available at www.cwrl.edu/~nunnion/diss/the quanta/cmptheory

Saussure, F. (1974): **Course in General Linguistics**, Fontana, London

Sayer, A. (2000): **Realism and Social Science**, Sage Publications, London

Scott, J. (1992): **Social Network Analysis: A hand book**, Sage publications

Sellars, W. (1976): Kant's Transcendental Idealism, **Collections of Philosophy**, 6: 165-181

Smith, M. J. (1998): **Social Science in Question**, Sage in association with the Open University, London

Social Exclusion Unit, (1998): Bringing Britain Together: A New Strategy for Neighbourhood Renewal, Command Paper 4045, Cabinet Office, London.

Society Guardian (Website visited in March 2003): Urban Design, Manchester's Hulme Crescents, available at http://society.guardian.co.uk/urbandesign

Sommerholff, G. (1950): "Purpose, Adaptation and Directive Correlation" in Buckely, W. et al. (1968: **Modern Systems Research for the Behavioural Scientist**, Aldine, Chicago

Spencer, H. (1898): **The Principles of Sociology**, D. Appleton, New York

Talbot, J (1988): Have Enterprise Zones Encouraged Enterprise? **Regional Studies,** 22: 507-514

Times Newspaper, 19 October, 1898, "Ebenezer Howard's Garden City Idea", UNC Challotte University, Department of Geography: Models of Land Use, (UNC Challotte University website visited in 2003), available at: www.uncc.edu,

University of Manchester (Website visited in 2003): Manchester Photo Gallery, available at: http://www.manchester.ac.uk/manchester/hulme.htm

University of Aberdeen and Kevin Murray Associates (2004): "Towards More Sustainable Places: Sustainable Places, Partnership Working and Urban Regeneration Skills", A Research Report for Turner & Townsend and the RICS Foundation, April 2004

Waldrop, M.M (1992): **Complexity: The Emerging Science at the Edge of Order and Chaos**, Penguin, London

Walsh, V. (1993): The Social Life of Hulme: Politics and Protest in an Inner City Housing Estate, A Thesis submitted to the University of Manchester for the Degree of PhD in the Faculty of Economics and Social Studies, Manchester

Ward, S.V. (1994): **Planning and Urban Change**, Paul Chapman Publishing Limited, London.

Wasserman, S. et al (1994: **Social Network Analysis : Methods and Applications,** Cambridge University Press, London

Watkins, T. (Website visited in 2003): Walter Christaller's Theory of Central Places, available at http://www2.sjsu.edu/faculty/watkins/christaller.html

Williams A.G (2000): **Complex Spatial Systems: The Modelling Foundations of Urban and Regional Analysis,** Pearson Education, London

Williams, M. and May, T. (1996): **Introduction to the Philosophy of Social Research**, Routledge, London

Zohar, D. (1997): **Rewiring the Corporate Brain**, Berrett-Koehler, San Francisco, CA

# Appendix 1: Social Network Analysis Questionnaire: Hulme Case Study

## Understanding the Urban Regeneration Processes through Complexity Theory

This questionnaire investigates the social networks that exist among the various organisations that have a stake in the regeneration of Hulme. The questionnaire has two main parts (A and B) and a total of 14 questions. Part A addresses the characteristics of your organisation while part B investigates the relationships your organisation has with other participants in the regeneration of Hulme. The questions for part B are contained in tables 1.0 and 2.0 where the various participants in the regeneration of Hulme are listed. Please answer all questions from the perspective of your organisation.

The Researcher would like to assure you that the survey is purely for academic purposes and as such only the information you give, and not your particulars, will appear in the report. If you have any questions or doubts regarding this survey, please do not hesitate to contact the Director of Studies, Professor Ilfryn Price at: Tel. 0114 2254032, e-mail: i.price@shu.ac.uk or the Moss Side and Hulme Partnership (MSHP) at: tel. 0161 226 2323. If you prefer an internet based questionnaire, please log-on to http://homepages.shu.ac.uk/~cmoobela and fill-in the questionnaire online.

Thank you

1) What is the name of your organisation? ________________________________

________________________________________________________________

2) How do you classify your organisation? [Please tick √]

a) Central Government Department ☐
b) Local Government Department ☐
c) Private Company ☐
d) Voluntary Sector Organisation ☐
e) Local community organisation ☐
f) Other ☐ Please state ____________

________________________________________________________________

3) What position do you hold in this organisation? ____________________

4) What does your organisation do? ______________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

5) When did your organisation start operating in Hulme? ________________

6) What influenced your organisation's interest in Hulme?

________________________________________________________________

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7) (For community organisations only) Approximately, how many members does your organisation have? ______________________________

8) What specific projects has your organisation undertaken in Hulme since it started operating in the area?

________________________________________________________________

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Table 1.0 Participants in the regeneration of Hulme

| **Question 9**<br>Which organisations do you communicate with in matters that affect Hulme? Please tick (√) in the boxes on the left and answer questions 11 to 14 for each of the selected organisations. | | **Question 11**<br>What is the frequency of communication with the organisation?<br>[Please tick √] | | | **Question 12**<br>Which statement best describes your relationship with the organisation?<br>[Please tick √] | | | **Question 13**<br>How do you mainly communicate with the organisation?<br>[Please tick √] | | **Question 14**<br>Do you consider the organisation as important to the regeneration of Hulme?<br>[Tick √] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Weekly or more frequently | Every fortnight | Monthly or other | We provide funds | We receive funds | Without financial exchange | Regular meetings | Non face to face | Yes | No |
| ☐ | Acorn Fund | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Africa Caribbean Mental Health Project | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Afwe Pub | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | AMEC (in Hulme) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Aquarius | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Ardwick and Brunswick Housing Team | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | ASDA (in Hulme) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Asian Women's Outreach Project | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Bellway Urban Renewals | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | BHAF | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Bibini Centre for Young People | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Birley Centre Consultative Group | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Bright and Clean | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

(Continued) Table 1.0 Participants in the regeneration of Hulme

| **Question 9**<br>Which organisations do you communicate with in matters that affect Hulme? Please tick (√) in the boxes on the left and answer questions 11 to 14 for each of the selected organisations. | | **Question 11**<br>What is the frequency of communication with the organisation? [Please tick √] | | | **Question 12**<br>Which statement best describes your relationship with the organisation? [Please tick √] | | | **Question 13**<br>How do you mainly communicate with the organisation? [Please tick √] | | **Question 14**<br>Do you consider the organisation as important to the regeneration of Hulme? [Tick √] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Weekly or more frequently | Every fortnight | Monthly or other | We provide funds | We receive funds | Without financial exchange | Regular meetings | Non face to face | Yes | No |
| ☐ | Crime Stoppers | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Crosby (in Hulme) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Drug Advice and Support in Hulme (DASH) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Employment Liaison Office (Hulme) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | European Urban Programme (in Hulme) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Firmstart (Manchester) ltd | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Government Office for the North West | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Greater Manchester Probation Service | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Guinness Trust | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Health Action Zone | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Healthy Living Network | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hideaway Youth Project | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Home watch | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

(Continued) Table 1.0 Participants in the regeneration of Hulme

| **Question 9** Which organisations do you communicate with in matters that affect Hulme? Please tick (√) in the boxes on the left and answer questions 11 to 14 for each of the selected organisations. | | **Question 11** What is the frequency of communication with the organisation? [Please tick √] | | | **Question 12** Which statement best describes your relationship with the organisation? [Please tick √] | | | **Question 13** How do you mainly communicate with the organisation? [Please tick √] | | **Question 14** Do you consider the organisation as important to the regeneration of Hulme? [Tick √] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Weekly or more frequently | Every fortnight | Monthly or other | We provide funds | We receive funds | Without financial exchange | Regular meetings | Non face to face | Yes | No |
| ☐ | Homes for Change | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Housing Corporation, NW Office | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme Adult Education Service | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme Adult Play Ground | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme Community Computing | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme Community Garden Centre | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme Community Safety Office | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme High Street Board | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme Housing Office-MCC | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme Sports | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Hulme Tenants Participation Project | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Kath Locke Centre | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Kellog UK ltd (in Hulme) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

(Continued) Table 1.0 Participants in the regeneration of Hulme

| **Question 9**<br>Which organisations do you communicate with in matters that affect Hulme? Please tick (√) in the boxes on the left and answer questions 11 to 14 for each of the selected organisations. | | **Question 11**<br>What is the frequency of communication with the organisation? [Please tick √] | | | **Question 12**<br>Which statement best describes your relationship with the organisation? [Please tick √] | | | **Question 13**<br>How do you mainly communicate with the organisation? [Please tick √] | | **Question 14**<br>Do you consider the organisation as important to the regeneration of Hulme? [Tick √] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Weekly or more frequently | Every fortnight | Monthly or other | We provide funds | We receive funds | Without financial exchange | Regular meetings | Non face to face | Yes | No |
| ☐ | Lesbian and Gay Association | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Manchester Primary Care Trust | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Manchester Refugee Support Network | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | MCC - Voluntary sector and Grants section | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | MCC Economic Initiatives Group | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | MCC Engineering and Surveying Department | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | MCC Land and Property Department | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | MCC Planning Department | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Moss Side and Hulme Agency for Economic Development | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Moss Side and Hulme Community Devt. Trust | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Moss Side and Hulme Economic Forum | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Moss Side and Hulme Partnership | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Moss Side Youth Power House | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

(Continued) Table 1.0 Participants in the regeneration of Hulme

| **Question 9**<br>Which organisations do you communicate with in matters that affect Hulme? Please tick (√) in the boxes on the left and answer questions 11 to 14 for each of the selected organisations. | | **Question 11**<br>What is the frequency of communication with the organisation? [Please tick √] | | | **Question 12**<br>Which statement best describes your relationship with the organisation? [Please tick √] | | | **Question 13**<br>How do you mainly communicate with the organisation? [Please tick √] | | **Question 14**<br>Do you consider the organisation as important to the regeneration of Hulme? [Tick √] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Weekly or more frequently | Every fortnight | Monthly or other | We provide funds | We receive funds | Without financial exchange | Regular meetings | Non face to face | Yes | No |
| ☐ | Neighbourhood Nuisance Teams | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | North British Housing Association | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Orbis and City Works | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | People First Housing Association | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Progress Trust | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | The Gate House Project | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | United Reformed Church | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Urban Economic Development | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Urban Splash (in Hulme) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Victim Support Unit | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Ward Co-ordination Support office | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Youth Offending Teams | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | Zion Arts Centre | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Table 2.0 Other Participants in the regeneration of Hulme (those not listed in table 1.0)

| **Question 10**<br>If there are any other participants in the regeneration of Hulme that you think have been left out in table 1.0, please list them here and answer questions 11 to 14 as you did in table 1.0 above. | | **Question 11**<br>What is the frequency of communication with the organisation?<br>[Please tick √] | | | **Question 12**<br>Which statement best describes your relationship with the organisation?<br>[Please tick √] | | | **Question 13**<br>How do you mainly communicate with the organisation?<br>[Please tick √] | | **Question 14**<br>Do you consider the organisation as important to the regeneration of Hulme?<br>[Tick √] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Weekly or more frequently | Every fortnight | Monthly or other | We provide funds | We receive funds | Without financial exchange | Regular meetings | Non face to face | Yes | No |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

15) What other comments, if any, do you have with regard to the regeneration of Hulme?

________________________________________

________________________________________

________________________________________

________________________________________

Thank you very much for your time, please post the questionnaire
using the self-addressed envelope provided.

## Appendix 2: Extracts from Chapter 2 of the UCINET 5 for Wondows

# Software for Social Network Analysis

### User Guide

## ~ 2 ~
## The UCINET Environment

### 2.1 Menus and Help

The program is menu-driven, which makes it very easy to use, even if you haven't used it in a while. After you start up the program, you will find yourself in the main window. The main window provides the following choices: **File, Data, Transform, Tools, Network, Options, and Help** together with three buttons. Each of these choices is itself a submenu with additional choices. The leftmost button directly calls the spreadsheet editor, as already stated the middle button exits from the program and the button on the right allows the user to change the default folder.

There are two ways to choose an item from a menu. The simplest method is to use the mouse to highlight the desired choice, then give a left click to activate a routine. If a highlighted choice has a submenu, that submenu will automatically appear. Another method is to press the highlighted letter of the desired choice, which is usually the first letter. For example, if the **Network** menu is highlighted then to get to **Roles and Positions** you can press **L**, you can now select another option if your choice is at the bottom level of the menu then the routine is activated. After selecting **Roles and Positions** typing **S** will select **Structural** and then **P** will select and run the **Profile** routine.

Sometimes, however, there is a way to circumvent the menus. Some menu items, such as displaying datasets found in **Data>Display**, have been assigned "hot-keys" which can be used to invoke that item directly without going through the menus. Provided no menus are highlighted then pressing **Ctrl+D** will immediately invoke the **Data>Display** routine.

All the hot keys are Control or Alt letter combinations. They are as follows:

| | |
|---|---|
| **Ctrl+F** | **File>Change Default Folder** |
| **Alt+X** | **File>Exit** |
| **Ctrl+S** | **Data>Spreasheet** |
| **Ctrl+D** | **Data>Display** |
| **Ctrl+B** | **Data>Describe** |
| **Ctrl+X** | **Data>Extract** |
| **Ctrl+M** | **Data>Random>Matrix** |

## 2.2 Forms

Suppose you choose a procedure from the menu. With few exceptions, the next thing you are likely to see is a *parameter form*. A form is a collection of one or more fill-in-the-blank questions. For example, suppose you click on **networks>Subgroups>Cliques** from the **File** menu. The form you see will consist of the following questions:

| | |
|---|---|
| **Input dataset:** | Camp92.##h |
| **Minimum size:** | 3 |
| **Analyze pattern of overlaps?:** | YES |
| **Diagram Type** | Tree Diagram |
| **(Output) Clique indicator matrix:** | CliqueSets |
| **(Output) Co-membership matrix:** | CliqueOverlap |
| **(Output) Partition indicator matrix:** | CliquePart |

The left-hand items (in **bold** type) are the question. The right-hand side contains the default answers. Often you will leave the default values as they are, expect for the input dataset, which is where you enter the name of the dataset that you want to analyze. You can either type the name yourself or double-click on that area and a dialog box will appear allowing you to choose the file you want from a list.

Once all the form is completed to your satisfaction, you activate the routine by clicking on the OK button (not shown above).

The next time you choose **Clique** from the menu, you will find that the default input dataset is whatever dataset you used the last time you ran **Clique**, unless the option **Smartdefaultnames** is on. In that case, the program puts in the default name that it thinks you might want to use, based on what you have done earlier. If this is the file you want to edit, just click on **OK**. If not, just start typing the name of the new file or click on the button to the right of the box. The moment you hit a key, the old filename will vanish: there is no need to backspace to the beginning of the name. If the filename is almost right but needs editing, use the mouse to place the cursor in the correct position so that you can fix it.

Whenever you are being prompted for a filename, then the button to the right of the box with three dots on it will activate the standard Windows procedure for selecting a file.

Incidentally, whenever you are called upon to enter a list of actors, you should refer to the actors by number (i.e. row or column in the data matrix) rather than by name or other label. Separate the numbers by spaces or commas. UCINET gives help in this process by allowing you to click on labels and automatically entering in the correct actor or matrix numbers. The button labeled with an **L** immediately next to the file selection button will give a list of labels you can now select from this list using the mouse. To select more than one entry you should press the **Control** key at the same time as you click on your choice. In addition, you can indicate groups of numbers using the following conventions:

**3 to 10**
**3-10**
**first 5**
**last 30**

The first two lines both specify the set of id numbers 3, 4, 5, 6, 7, 8, 9, 10. The last line only works when it is clear to the program what the total number of actors is. All of these conventions can be mixed, as follows:

**List of actors to DROP:** first 4, 18 12,5 19 to 25, last 2

**2.3 Running An Analysis**

As the diagram below indicates, the typical UCINET 5.0 procedure takes two kinds of input, and produces two kinds of output.

```
                        -----------
input parameters ---> |           | ---> output text
                      | PROCEDURE |
input datasets   ---> |           | ---> output datasets
                        -----------
```

One kind of input consists of UCINET 5.0 datasets. Most procedures take a single dataset as input, but that dataset may contain multiple matrices, often representing different social relations measured on the same actors. Other procedures (such as the **Join** and **QAP Regression** procedures) take multiple datasets as input, each of which may contain several matrices.

Another kind of input consists of a set of parameters which either describe the data or alter the way the program runs. For example, as you saw earlier, the parameters for the **Clique** procedure are: the name of the input dataset, the minimum size of clique to report, and the names of various output files. Most parameters have default values which the user will have an opportunity to either accept or override.

Parameters are specified in forms that appear immediately after a procedure is selected from the menu. The first time a procedure is invoked in a given session, the fields for all parameters will contain "factory-set" default values (wherever possible). If you change the values of any parameters, these changes will remain in effect for subsequent runs, until you change them again or exit UCINET. The only exception to this rule occurs when some default settings depend on the values of other default settings, in which case changing certain parameter values will cause the program to change other defaults, even if you have previously set them.

One set of parameters that always have default values is the names of a procedure's output files. Output files are UCINET 5.0 datasets that can be read by all of the other UCINET procedures and therefore used as input for further analyses. For example, one of the outputs of the CLIQUE program is an actor-by-actor matrix whose ijth cell gives the number of cliques that actors *i* and *j* are both members of. This matrix is suitable for input to the MDS program to obtain a spatial representation of the pattern of overlaps. By default, the name of this dataset is **CliqueOverlap**.

In addition to output datasets, most UCINET procedures also produce a textual report as output. This report is always saved to an text file called a **Log File** (usually stored in the \Windows\System directory), and is also automatically displayed on the screen.

Let us run through an example of a clique analysis. The first step is to clique on **Network>Subgroups>Cliques** from the toolbar. This will pop up a form that contains the following:

```
Input dataset:
Minimum size:                        3
Analyze pattern of overlaps?:        YES
Diagram Type                         Tree Diagram
(Output) Clique indicator matrix:    CliquesSets
(Output) Co-membership matrix:       CliquesOver
```

```
(Output) Partition indicator matrix: CliquesPart
```

The first line asks for the name of the UCINET 5.0 dataset containing the data. If the dataset is called **TARO** and is located in the **\uci3** folder of the **c:** drive, you would fill in the blank with **c:\uci3\TARO**. (Of course, naming the drive and folder is only necessary if the data are located in a different drive/folder than the current default). You could also select this file by clicking on the button to the right of the question and selecting the file using the mouse from the window that opens up.

The second line asks for the minimum size of clique to report. A default answer of 3 is already filled in. To override the default, just type over it.

The third line asks whether to compute and analyze an actor-by-actor matrix that counts up, for each pair of actors, the number of cliques they belong to in common. This matrix is then submitted to hierarchical clustering. The default answer here is *YES*, but to save processing time you may wish to override the default when working with large datasets.

The fourth line asks a question about what type of clustering diagram you would like to view. The default is a tree diagram; the only other alternative is a dendrogram which is a variation on the same theme.

The fifth through seventh lines ask for the names of datasets to contain the key outputs from the analysis. These datasets can then be used as input to other analyses. Default names are supplied for all three.

When you are through entering or modifying these parameters, click on **OK** to begin the analysis. Since TARO is a standard UCINET dataset then you will be able to run this analysis. The result will be a tree diagram appearing on the screen. If you now clique on the OK button then the following Log File will be displayed.

```
CLIQUES
--------------------------------------------------------------------------------

Minimum Set Size:   3

Input dataset:      C:\Uci3\TARO

10 cliques found.

   1:  2 3 17
   2:  1 2 17
   3:  17 18 22
   4:  4 5 6
   5:  4 6 7
   6:  5 20 21
   7:  8 9 10
   8:  11 20 21
   9:  12 13 14
  10:  12 14 15


Group Co-Membership Matrix

                           1 1 1 1 1 1 1 1 1 1 2 2 2
     1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2
     - - - - - - - - - - - - - - - - - - - - - -
  1  1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
  2  1 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0 0 0
  3  0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
  4  0 0 0 2 1 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
 5  0 0 0 1 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
 6  0 0 0 2 1 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 7  0 0 0 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 8  0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0
 9  0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0
10  0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0
11  0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1 0
12  0 0 0 0 0 0 0 0 0 0 0 2 1 2 1 0 0 0 0 0 0 0
13  0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0
14  0 0 0 0 0 0 0 0 0 0 0 2 1 2 1 0 0 0 0 0 0 0
15  0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 0 0 0 0 0 0 0
16  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
17  1 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 3 1 0 0 0 1
18  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 1
19  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
20  0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 2 2 0
21  0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 2 2 0
22  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 1

SINGLE-LINK HIERARCHICAL CLUSTERING

              1 1 1 1 1 1 1           1 2 2       1 1 2
Level     8 9 0 3 2 4 5 6 9 5 6 4 7 1 1 0 1 3 2 7 8 2
-----     - - - - - - - - - - - - - - - - - - - - - -
    2     . . . . XXX . . . . XXX . . XXX . . XXX . .
    1     XXXXX XXXXXXX . . XXXXXXXXXXXXX XXXXXXXXXXX
    0     XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX


Group indicator matrix saved as dataset CliquesSets
Clique co-membership matrix saved as dataset CliquesOver
Clique co-membership partition-by-actor indicator matrix saved as dataset CliquesPart

Date and time: 15 Jan 99 13:38:43
Running time:  00:00:01
```

The output from the **CLIQUE** program is typical of most of the analytical procedures. It begins with a report of the parameter settings used to make the run. This makes it easy to interpret and reproduce the output at a later time. The next bit of output is a report on the number of cliques found, followed by a listing of each clique (one to a line). The first number on each line identifies the clique. The remaining numbers identify the actors that belong in that clique. If the data had contained actor labels (names), you would see names instead.

After the listing of cliques is an actor-by-actor clique co-membership matrix that gives the number of cliques each pair of actors has in common. This is the basis for the next table, which gives the results of a single-link hierarchical clustering of the co-membership matrix. If you would prefer a different clustering algorithm, you are free to submit the co-membership matrix, which is automatically saved , to the clustering program of your choice.

The final bit of output is a set of statements indicating what output files were created by the procedure. The main output file is a clique-by-actor binary matrix that indicates which actors belong to which clique. This matrix can be analyzed further, or used to extract a subgraph from the larger network using the **Data>Extract** procedure. For example, if you want to pull out just the network of relationships among members of, say, the fourth clique, just tell the **Extract** program what the name of the original dataset is, what the name of the clique-by-actor indicator matrix is (the default is CliquesSets) and which clique you want (#4 specified as ROW 4). That's all there is to it.

### 2.4 The Log File

Textual output such as shown above is normally written to a text file in the \windows\system directory whose default name is **Log File Number x**, where x is an integer. When you run an analysis, the program writes output to the Log File and then displays the contents to the screen the number of the file is displayed in a box in the tool bar. The file can edited, saved, printed in the normal way using the buttons and options on the toolbar. When you run another procedure a new Log File with a number one higher than the last is created. You may leave Log Files open on the screen or you may close them. You can re-open a previously closed Log Files by clicking on **File>Edit Previous Log File,** this opens up a window which displays the number of the last Log File and gives a list of the existing Log Files together with what routine was run to create them. Simply select a file or type in its number to open up a closed file. As a default UCINET will keep 50 previous files but this can be increased or decreased by selecting **Options>Number of Log Files** and changing the value. If you wish to keep a Log File from one session to the next then it must be saved, this can be done by clicking the save icon on the procedure output window or selecting **Save** from the **File** option again in the procedure output window. Note that any unsaved log files are deleted as soon as you exit from UCINET.

### 2.5 Datasets

There are three important things to keep in mind about UCINET 5.0 datasets. The first is that they are collections of one or more matrices. It doesn't matter whether you think about your data as a graph (i.e., a set of vertices and a set of edges or links), a relation (i.e., a set of ordered pairs), a hypergraph (i.e., a set of subsets), or anything else: as far as UCINET is concerned, your data are a collection of matrices. This does not mean that UCINET cannot read data that are not in matrix form: it can (see Chapter 3 "Importing Data" in this Guide). It just means that once the data are in the system, it is thought of as a matrix.

Network analysts commonly think of their data as *graphs*. A graph is a set of points (also known as nodes or vertices) together with a set of lines (links, ties, edges) that connect the points. The information in a graph (who is connected to whom) can be represented by a matrix known as the *adjacency matrix*, in which a given cell X(i,j) contains a value of 1 if nodes *i* and *j* are connected, and 0 otherwise. In more precise language, a graph G = (V,E) with vertex set V and edge set E can be represented as a square symmetric 1-mode matrix *X*, known as the *adjacency matrix*, in which X(i,j) = X(j,i) = 1 if (i,j) belongs to E and X(i,j) = X(j,i) = 0 otherwise. Thus, the rows and columns of the adjacency matrix correspond to the nodes of the graph, and the cells in the matrix correspond to pairs of nodes or *dyads*. A matrix value X(i,j) = 1 indicates the presence of a link between node *i* and node *j*, and X(i,j) = 0 indicates the absence of a link.

Here is an example of a matrix representing a network:

| | A | B | C | D | E |
|---|---|---|---|---|---|
| A | 0 | 1 | 0 | 1 | 1 |
| B | 1 | 0 | 1 | 0 | 0 |
| C | 0 | 1 | 0 | 0 | 1 |
| D | 1 | 0 | 0 | 0 | 0 |
| E | 1 | 0 | 1 | 0 | 0 |

In this network, actor A has a tie with actors B , D and E, but not with C and not with him/her self. Actor B has a tie with A and with C, actor C has a tie with B and E, actor D has a tie only with A, and actor E has a tie with A and C.

A *directed* graph is a set of points and a set of *arcs* (also known as arrows or lines with heads and tails) that connect them. They are used to represent relations among nodes which are not necessarily reciprocal, as in "is in love with" or "is the boss of". The information in a directed graph can be recorded as a square 1-mode adjacency matrix (not necessarily symmetric) where X(i,j) = 1 if i is connected to *j* and X(i,j) = 0 otherwise. Note X(i,j) may equal X(j,i), but is not required to.

A *valued* graph is represented by a square, 1-mode matrix in which X(i,j) gives the value of the link from *i* to *j*, which might represent a strength of relationship, a length of a road, a probability of a state transition, a frequency of interaction, etc.

A *hypergraph* is a collection of subsets of a set of nodes. The subsets are conceptually like edges/links that may have more than two endpoints. In matrix form, a hypergraph is represented by a 2-mode *incidence* matrix in which Y(i,j) = 1 if node *i* is contained in subset *j*, and Y(i,j) = 0 otherwise.

The matrices contained in a UCINET dataset can have any shape or size, and they do not have to represent networks. For example, the following three collections of numbers are all matrices:

**Matrix #1:**

1 3 2 5
1 5 7 2
1 2 7 2
2 4 5 2
9 6 5 1

Matrix #2:

1 3 8 9 2 3 5 1.7

Matrix #3:

3.1415

Note that the second matrix has 8 columns and 1 row. The third matrix has 1 row and 1 column. Odd shapes are not a problem. All that is important is that every row contains the same number of columns, and vice-versa.

A useful feature of UCINET datasets is that they may contain more than one matrix, though the rows and columns of each matrix must correspond to the same objects. This enables you to place in a single file all network data relating to a single set of people. For example, you might have a set of families as nodes, and measure two relations on these families: "is married to a member of" and "has done business with a member of". This is useful for applying network techniques that take as input one or more social relations, such as most of the positional methods (e.g., CONCOR, REGE). Placing multiple relations in a dataset can even be useful when using techniques that do not apply to multiple relations, such as centrality measures. In UCINET, wherever possible, a procedure implementing a technique that does not make sense for multiple relations will run the technique on each relation sequentially. One application of this is to run, say, a centrality measure on a dataset containing several hundred random networks. The program will compute and save its measures for each network in the file. The results can then be analyzed statistically.

Another way of using multi-matrix datasets is implemented in the **Tools>Matrix Algebra** procedure. Here, the program "thinks" of a multi-matrix dataset as a single 3-way matrix composed of rows, columns and levels, and allows the user to perform operations on all three dimensions.

The second important thing to understand about UCINET datasets is that they are not text files. Therefore you cannot use a word processor or editor to enter or change them. Only UCINET (and other software by Analytic Technologies) can read and write them. This can be inconvenient, but it is well worth the significant improvement in performance that it buys. Of course, UCINET also provides a way to convert text files (and Excel spreadsheet files) into UCINET datasets (see the **Import** command) and vice-versa (see the **Export** command). In this respect, UCINET is similar to SYSTAT, SAS, SPSS, GRADAP and other well-known analytic packages.

The third important thing is that a single UCINET dataset actually consists of <u>two</u> physical files. One (with extension .##D) contains the actual data, and the other (with extension .##H) contains information about the data. In referring to an UCINET dataset, however, you will only refer to the ##H file (or just skip the extension altogether). Instead, you will use the filename proper, or filename.##H, as in "sampson" or "sampson.##h". Filenames can contain spaces and can start with a numeric character. However, occasionally, you will need to enclose a filename that contains spaces within quotation marks. UCINET IV datasets are compatible with UCINET 5.0 and no conversion is necessary.

### 2.6 The Default Directory

In any form, if you enter the name of file to be analyzed (e.g., **camp92**), UCINET assumes the file is in the current directory, unless you enter a full pathname (e.g., **c:\program files\ucinet 5\datafiles\camp92**). To change the default directory, click on the button on the far right of the main UCINET form that looks like a file cabinet. This will open a tree-like dialogue form that will allow you to choose the folder that you want to read and write datafiles to and from. Make sure to double-click the direct

### 2.6 Program Organization

UCINET is a diverse collection of hundreds of procedures and techniques drawn from a variety of sources. We have organized these myriad capabilities into six basic categories, corresponding to the following six items in the main window: **File, Data, Transform, Tools, Network and Options.**. In this section, we describe what kinds of routines are to be found under each heading.

### 2.7 File Submenu

The **File** submenu comprises routines which deal with files and folders together with the print set up and a command to exit UCINET. You can change the default folder, this is the folder where UCINET will look for a file if you do not provide it with a full path name. You may also create folders in which to keep some or all of your files. There are routines to **rename, copy** and **delete** UCINET files, useful because UCINET datasets consist of two physical files, which means that operations like deleting would otherwise have to be performed twice. There are also routines to **edit** text files and review and to **review** or **edit Log Files.**

### 2.8 Data Submenu

The **Data** submenu contains routines for managing UCINET datasets. It is divided into six basic sections. The first section contains just one routine the spreadsheet editor for inputting and editing UCINET files directly. The second section contains routines to create new UCINET datasets or bring other forms of data into UCINET. These include

**Random** to create random data based on different distributions, **Import** for converting ASCII files of various types into UCINET datasets; and **Export**, for converting UCINET datasets into ASCII files that other programs can read together with three routines (**Attribute, Affilations** and **CSS**) for converting specific types of data into standard network data. The next section contains **Display**, which displays the contents of UCINET dataset in matrix form, and **Describe** which describes the meta-information available on UCINET dataset (such things as the number of rows and columns, labels and titles, etc) and also allows the user to input or edit labels. The fourth section consists of routines to **Extract** parts of a dataset to form a new dataset, **Join** together two or more datasets and **Unpack** a multirelational dataset into individual matrices. The next section of routines for performing non-numeric transformations and manipulations of UCINET datasets. They include: **Sort**, for sorting rows and columns of a matrix according to the values of a given variable; **Permute**, for re-ordering rows, columns and matrices into a specified order; and **Transpose** for interchanging the rows with the columns. The final section allows the user to re-organise the data in a variety of ways.

### 2.9 Transform Submenu

This submenu contains routines for transforming graphs and networks into other kinds. The submenu is divided into four sections. The first section contains routines that combine rows and/or columns. **Block** creates block densities which can then be converted into blockmodels, **Collapse** performs a similar but more general function allowing for rows and columns to be treated separately and giving the user options on how to calculate the combined values. The second section contains routines that typically operate on all cells of a matrix without changing its dimensions. Operations implemented include symmetrizing, dichotomizing, recoding, reversing and the **Diagonal** command, which enables the user to change the values of the main diagonal of a matrix, and to save the current values to a file. The third section contains routines **Rank** and **Normalize,** the first routine converts lists to ranks and the second normalizes either the whole matrix or just the rows (or columns) using a variety of techniques. The final section contains routines that usually result in either additional nodes, lines or additional relations. They include; **Linegraph**, which creates a graph in which the nodes correspond to the lines of an original graph; **Incidence**, which converts an adjacency matrix to a rectangular node-by-line indicator matrix; **Multigraph**, which converts a valued graph into a collection of binary adjacency matrices, one for each value in the graph, **Bipartite** which converts an incidence matrix of a bipartite graph into an adjacency matrix, **Multiplex** which constructs multiplex graph from a multirelational graph and **Semigroup** which generates the semigroup from generator matrices.

### 2.10 Tools Submenu

UCINET provides a number of tools that although they are not strictly network procedures have been used widely by network analysts. The submenu contains routines for metric and non-metric multidimensional scaling, cluster analysis, correspondence analysis, singular value decomposition, factor analysis and measures of similarity and dissimilarity. The **Statistics** section has standard descriptive methods the P1 model and a number of permutation test methods. These include **Matrix QAP** (regression and correlation), **Autocorrelation** as well as permutation versions of **Regression, Anova and T-Tests**. This section also includes some routines for constructing dendrograms, scatterplots and tree diagrams from UCINET datasets.

### 2.11 Network Submenu

Under **Cohesion** are found routines for evaluating distances among nodes, maximum flows between pairs of nodes, reachability, volume of paths between nodes, etc. **Regions** has methods for finding **Components** (strong and weak), **Bi-components** and **K-Cores**. Under **Subgroups** are found routines for finding various types of cohesive subsets proposed in the network literature, including cliques, n-cliques, n-clans, k-plexes, lambda sets and factions. **Ego Networks** calculates a variety of ego-based measures for every actor in the network. Under **Centrality** are found routines for computing various measures of node centrality, including degree, closeness, betweenness, flow betweenness, information centrality, eigenvector centrality, power and the measures of Katz and Hubbell. **Core/Periphery** leads to two routines for detecting core/periphery structures and locating each actor's position in the structure. Under **Roles and Positions** are found routines for clustering or classifying actors based on several definitions of structural similarity: structural equivalence, automorphic equivalence, and regular equivalence. Several algorithms are available for computing each kind of equivalence (e.g. **CONCOR** and profile euclidean distance for structural equivalence; **REGE** and **CATREGE** for regular equivalence; and **MAXSIM** and **ExCatRege** for exact equivalence). **Properties** has routines for computing density and transitivity of the network as a whole

### 2.12 Options Submenu

These are routines for changing default settings of UCINET 5.0 system parameters, such as data checking, display options and page size.

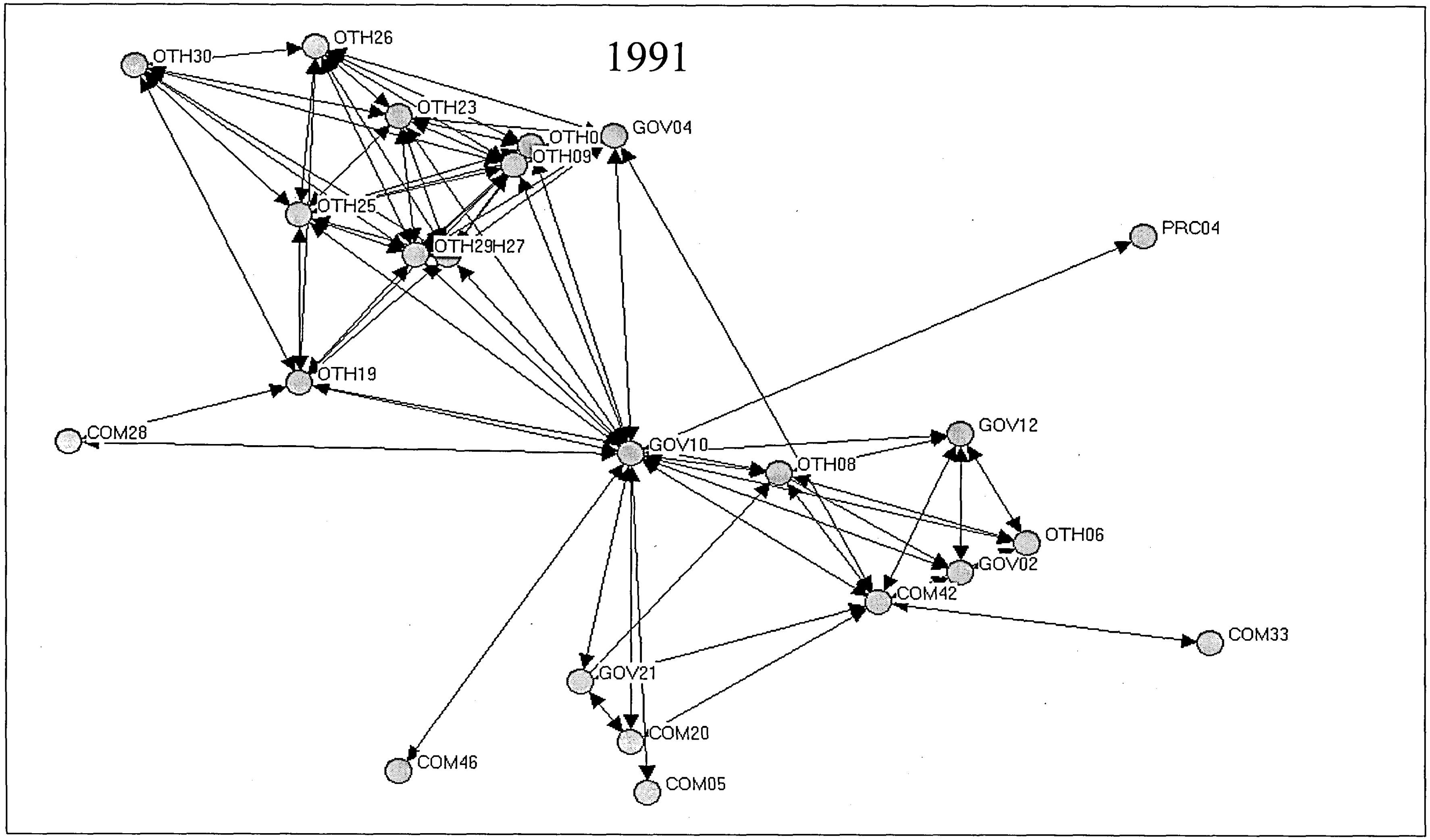
## Appendix 3: List of agents in the Regeneration of Hulme between 1990 and 2003

| Code | Name |
|---|---|
| COM01 | Abasandi |
| COM02 | Acorn |
| COM03 | Action Resources |
| COM04 | A-fe-we |
| COM05 | Africa Caribbean Mental Health Project |
| COM06 | Afro-Caribbean Community Group |
| COM07 | Aisha Child Caring Project |
| COM08 | Alexandra Park Project |
| PRC01 | Amec Plc |
| COM09 | Aquarius Community Group |
| OTH01 | Arawak Housing Association |
| PRC02 | ASDA |
| COM10 | Asian Women's Outreach Project |
| PRC03 | Bellway Urban Renewals |
| COM11 | Birley Centre Consultative Group |
| COM12 | Birley Youth Centre |
| COM13 | Black Health Agency |
| COM14 | Black Youth Counselling and Advocacy Services |
| COM15 | Central Youth Offending Team |
| OTH02 | Chevassut County Primary School |
| COM16 | Child Care Development Team |
| COM17 | Claremont Day Centre |
| GOV01 | Crime Stoppers |
| COM18 | DIP |
| COM19 | Diverse Resources |
| COM20 | Drug Advice and Support in Hulme (DASH) |
| OTH03 | Ducie High School |
| COM21 | EDGE |
| COM22 | Family Advice and Community Resource |
| OTH05 | Family Housing Association |
| PRC04 | Firmstart (Manchester) ltd |
| COM23 | Focus |
| COM24 | Friends of Hulme Park |
| GOV02 | Government Office for the North West |
| COM25 | HAPP |
| GOV03 | Health Action Zone |
| COM26 | Healthy Living Network |
| COM27 | High Place Syndicate |
| PRC05 | Homes/Work for Change |
| OTH06 | Housing Corporation, North West |
| COM28 | Hulme Action Resource Project (HARP) |
| GOV04 | Hulme Adult Education Centre |
| COM29 | Hulme Adventure Play Ground |
| COM30 | Hulme Advisors Group |
| COM31 | Hulme Alliance of Tenants and Residents |
| COM32 | Hulme and Moss Side Christian Fellowship |
| GOV05 | Hulme Clinic |
| COM33 | Hulme Community Computing |
| COM34 | Hulme Community Garden Centre |
| COM35 | Hulme Community Homes ltd |
| COM36 | Hulme Community Safety |
| OTH07 | Hulme Economic Assembly |
| COM37 | Hulme Health Forum |
| OTH08 | Hulme Housing Association Partnership |
| GOV06 | Hulme Housing Office |
| GOV07 | Hulme Library |

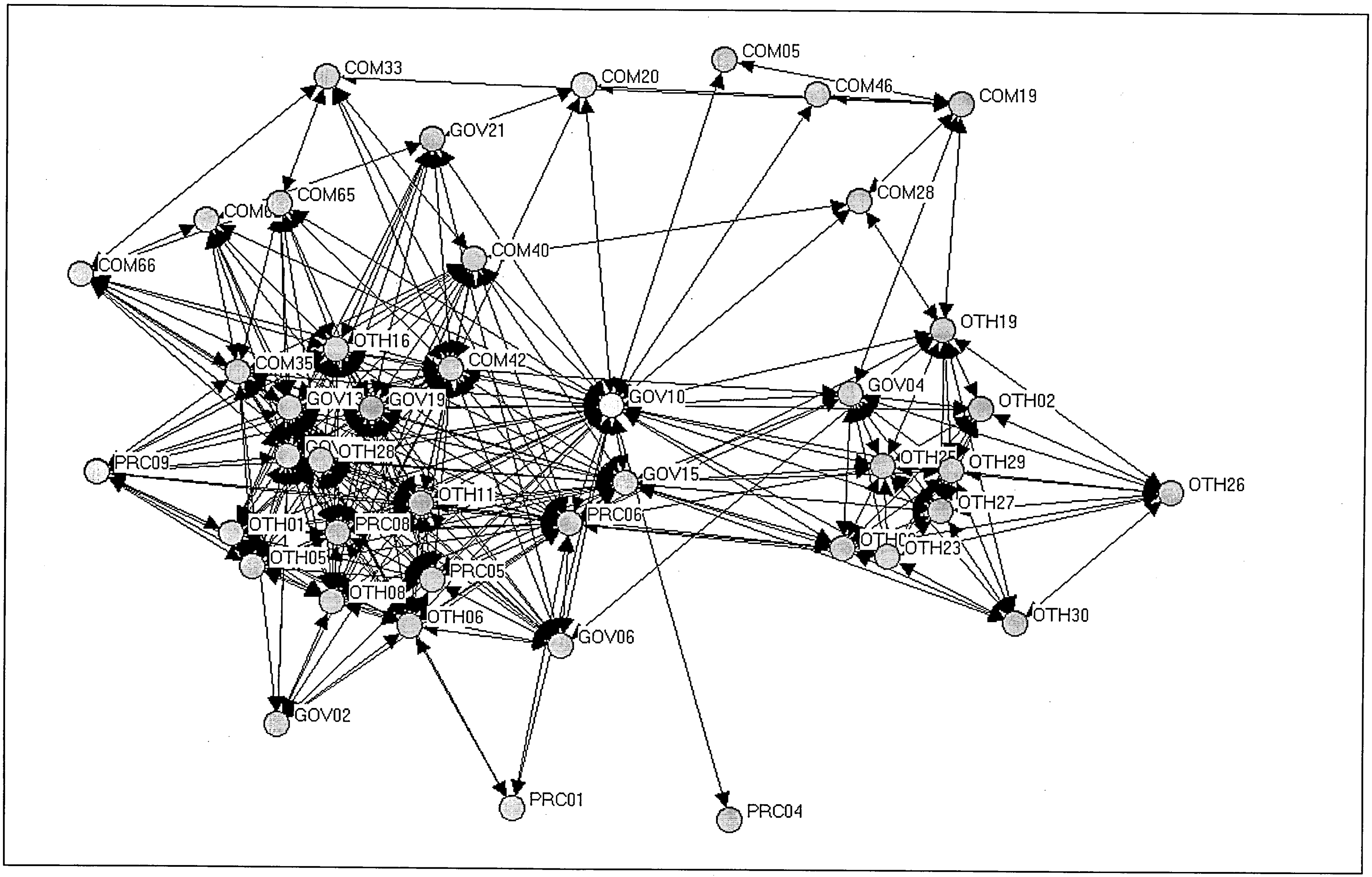
| | |
|---|---|
| COM38 | Hulme News |
| COM39 | Hulme Play Forum |
| COM40 | Hulme Project Office |
| PRC06 | Hulme Regeneration ltd |
| COM41 | Hulme Sports Project |
| COM42 | Hulme Tenants Participation Project |
| COM43 | Hulme Voluntary Organisations Group |
| COM44 | Joblink |
| COM45 | Kath Locke Centre |
| PRC07 | Kellogg's (UK) ltd |
| COM46 | Lesbians' Community Project |
| COM47 | Local Economic Forum |
| COM48 | Locality Project |
| OTH09 | Lorretto College |
| OTH10 | Luther King House |
| GOV08 | Manchester Adult Education Service |
| GOV09 | Manchester Adventure Play Grounds |
| OTH11 | Manchester and District Housing Association |
| GOV10 | Manchester City Council, Voluntary Sector Support Office |
| OTH12 | Manchester College of Arts and Technology |
| GOV11 | Manchester Health Consortium |
| GOV12 | Manchester Housing |
| GOV13 | Manchester Housing Consortium |
| GOV14 | Manchester Leisure & Sports Programme |
| PRC08 | Manchester Professional Services ltd |
| GOV15 | Manchester Public Libraries |
| GOV16 | Manchester Science Park |
| OTH13 | Manchester University |
| COM49 | Manchester Youth Service |
| OTH14 | Mancunian Trust |
| OTH15 | Martenscroft Centre |
| PRC09 | MBL Design Consultants |
| OTH16 | Moss Care Housing Association |
| PRC10 | Moss Side and Hulme Agency for Economic Development |
| COM50 | Moss side and Hulme Christians |
| COM51 | Moss Side and Hulme Community Development Trust |
| COM52 | Moss Side and Hulme Community Safety Group |
| GOV17 | Moss Side and Hulme Partnership |
| GOV18 | Moss Side Health Centre |
| OTH17 | Moss Side Probation Office |
| COM53 | Moss Side Youth Centre |
| COM54 | MPSL |
| COM55 | MSSL |
| COM56 | National Phobics Society |
| COM57 | NIA Centre |
| OTH18 | North British Housing Association |
| GOV19 | North Hulme Adventure Play Ground |
| PRC11 | OMI Architects |
| OTH19 | Parish Church of the Ascension |
| COM58 | Patriots Centre |
| PRC12 | Paul Butler Associates |
| OTH20 | People First Housing Association |
| OTH21 | Progress Trust |
| OTH22 | Rolls Crescent Primary school |
| OTH23 | Royce College and Primary School |
| COM59 | Royce Family Club |
| GOV20 | Rutland Day Nursery |
| OTH24 | South Manchester College |
| COM60 | St. George's Community Association |
| OTH25 | St. Philips College and Primary School |

| | |
|---|---|
| OTH26 | St. Wilfrid's Catholic Church |
| OTH27 | St. Wilfrid's Primary school |
| COM61 | Stepping Out |
| OTH28 | The Guiness Trust Housing Association |
| PRC13 | Trafford Park Development Corporation |
| OTH29 | Trinity High School |
| COM62 | Turning Point |
| OTH30 | United Reformed Church |
| PRC14 | Urban Splash |
| GOV21 | Victim Support Unit |
| COM63 | Voluntary Action Manchester (VAM) |
| COM64 | Wesley Furniture and Resource Project |
| COM65 | Youth Support Project |
| COM66 | Zion Arts Centre |
| COM67 | Zion Community Resource |

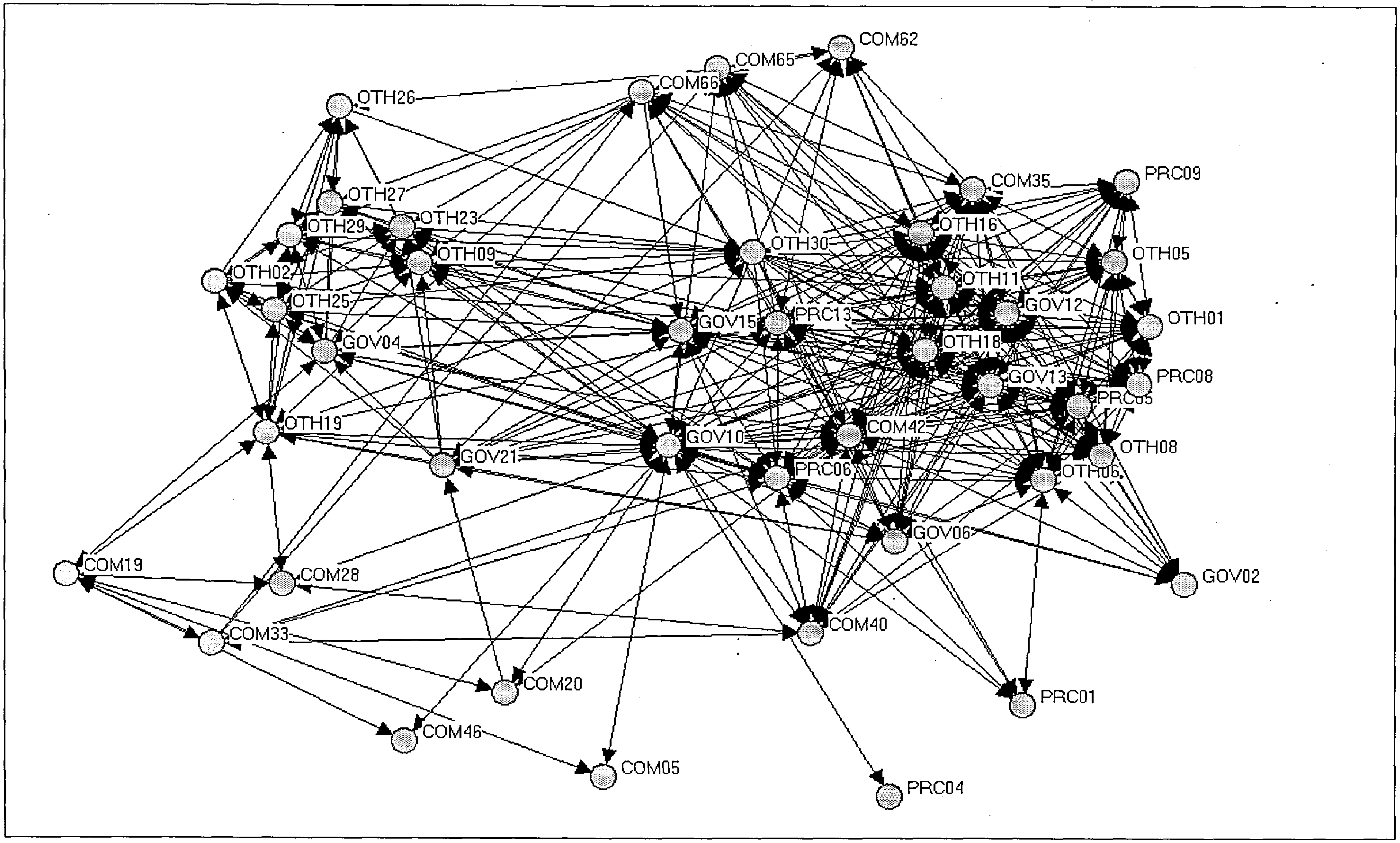
# Appendix 4: 1990 - 2002 Sociograms for Hulme Regeneration



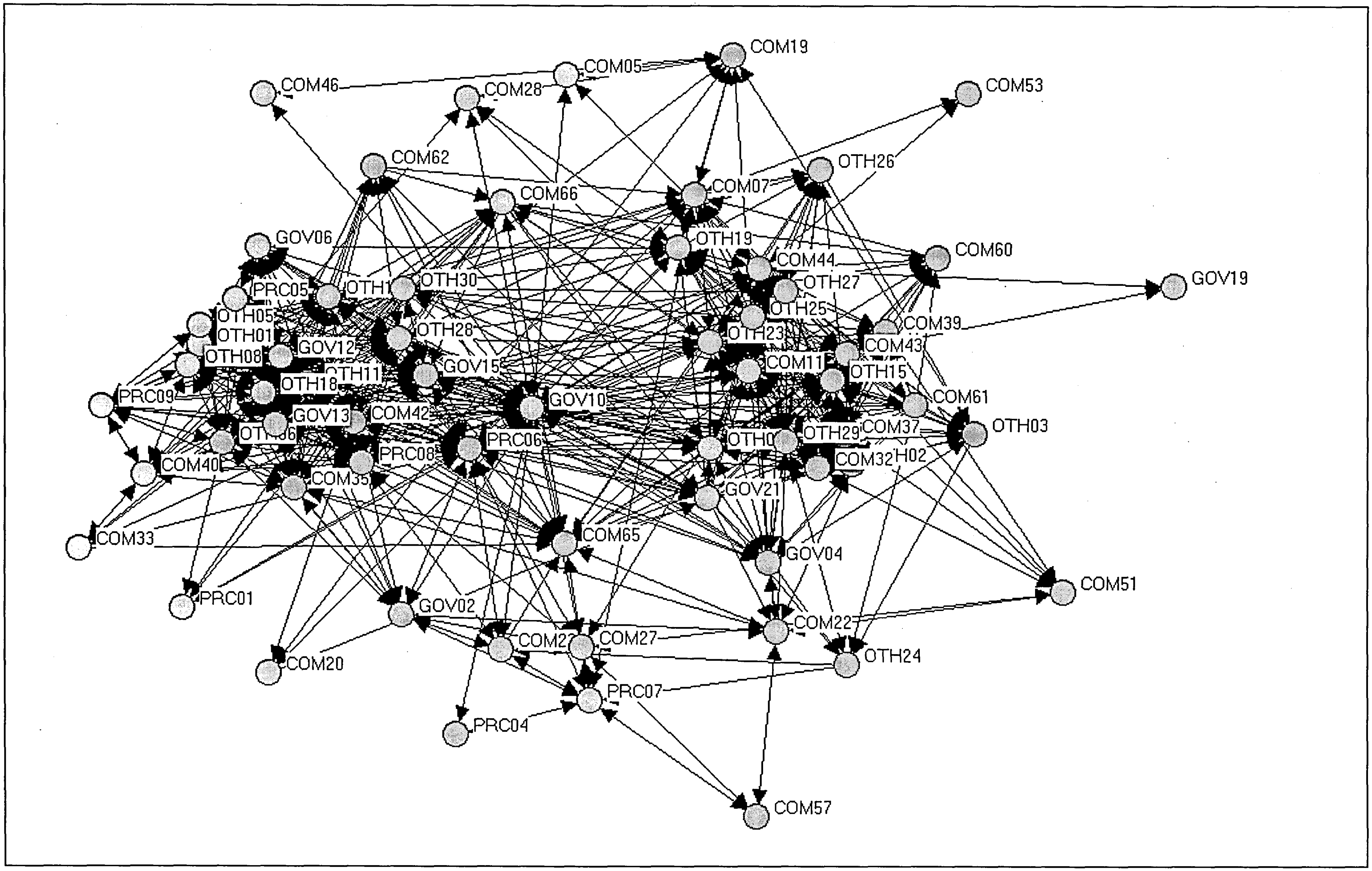
# 1992


COM33
COM20
COM05
COM46
COM19
GOV21
COM65
COM28
COM66
COM40
OTH19
OTH16
COM42
COM35
GOV13
GOV19
GOV10
GOV04
OTH02
PRC09
OTH28
OTH29
OTH26
GOV15
OTH11
OTH27
PRC06
OTH01
PRC08
OTH23
OTH05
PRC05
OTH08
OTH30
OTH06
GOV06
GOV02
PRC01
PRC04

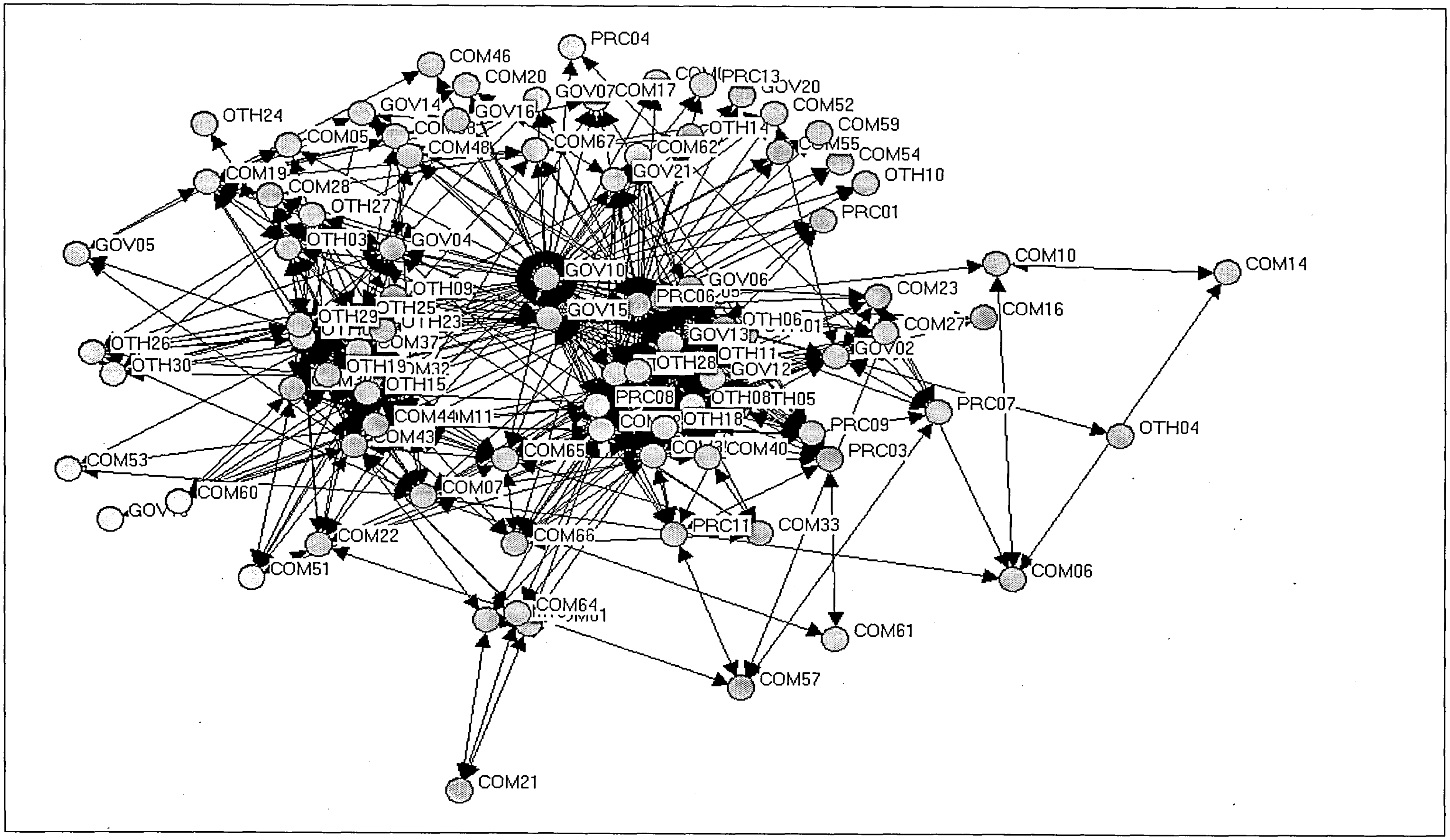
# 1993


COM62
COM65
COM66
OTH26
COM35
PRC09
OTH27
OTH23
OTH29
OTH16
OTH30
OTH05
OTH09
OTH02
OTH11
OTH25
GOV12
GOV15
PRC13
OTH01
GOV04
OTH18
GOV13
PRC08
PRC05
OTH19
GOV10
COM42
OTH08
GOV21
PRC06
OTH06
GOV06
COM19
COM28
GOV02
COM33
COM40
COM20
PRC01
COM46
COM05
PRC04

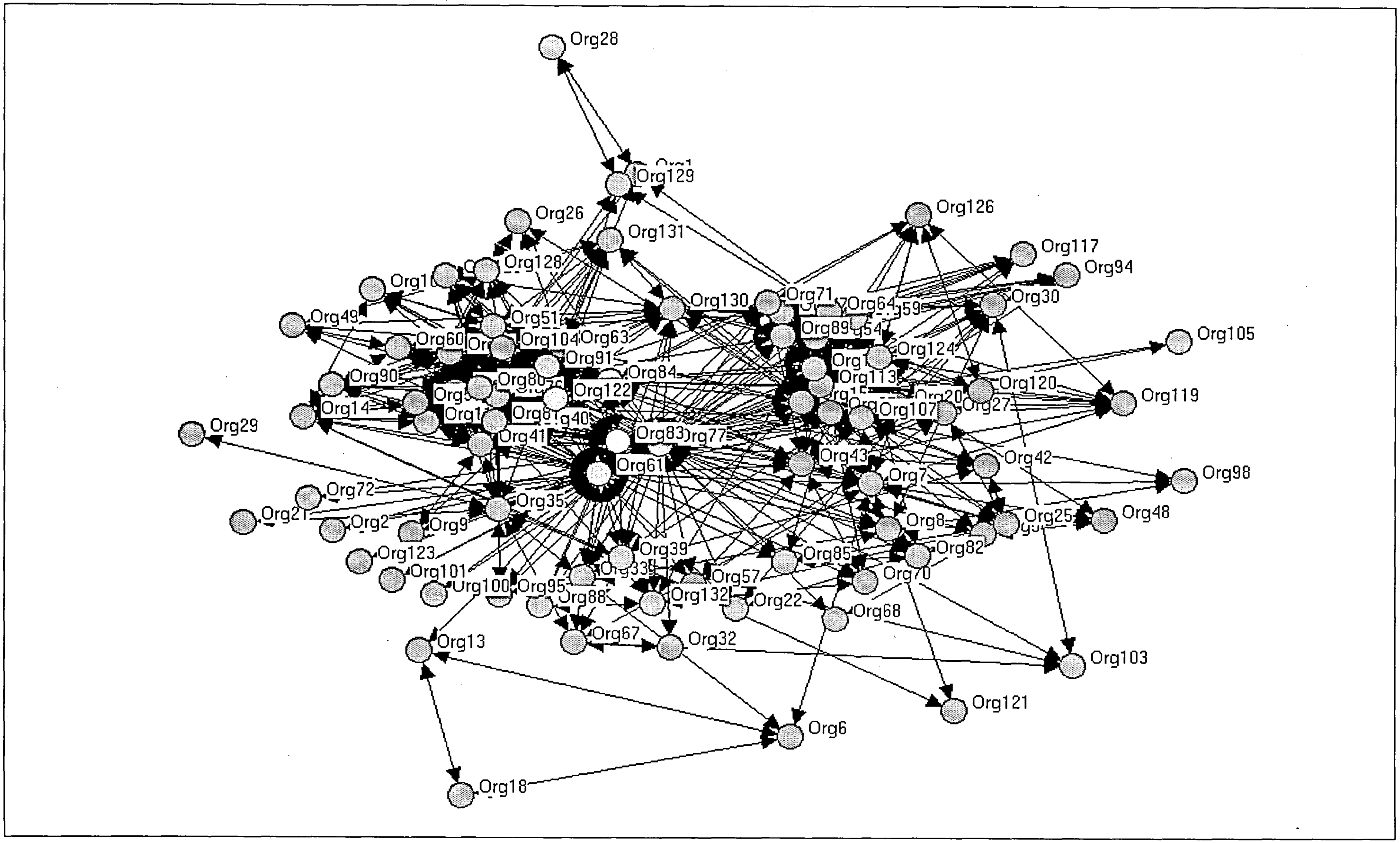
1994


COM19
COM05
COM46
COM28
COM53
COM62
OTH26
COM07
COM66
GOV06
OTH19
COM44
COM60
GOV19
OTH27
PRC05
OTH30
OTH25
OTH05
OTH28
COM39
OTH01
OTH23
COM43
OTH08
GOV12
GOV15
COM11
OTH15
OTH11
PRC09
OTH18
GOV10
COM61
GOV13
COM42
OTH29
COM37
OTH03
PRC06
PRC08
COM32
COM40
GOV21
COM33
COM65
GOV04
COM51
PRC01
GOV02
COM22
COM27
COM20
OTH24
PRC07
PRC04
COM57

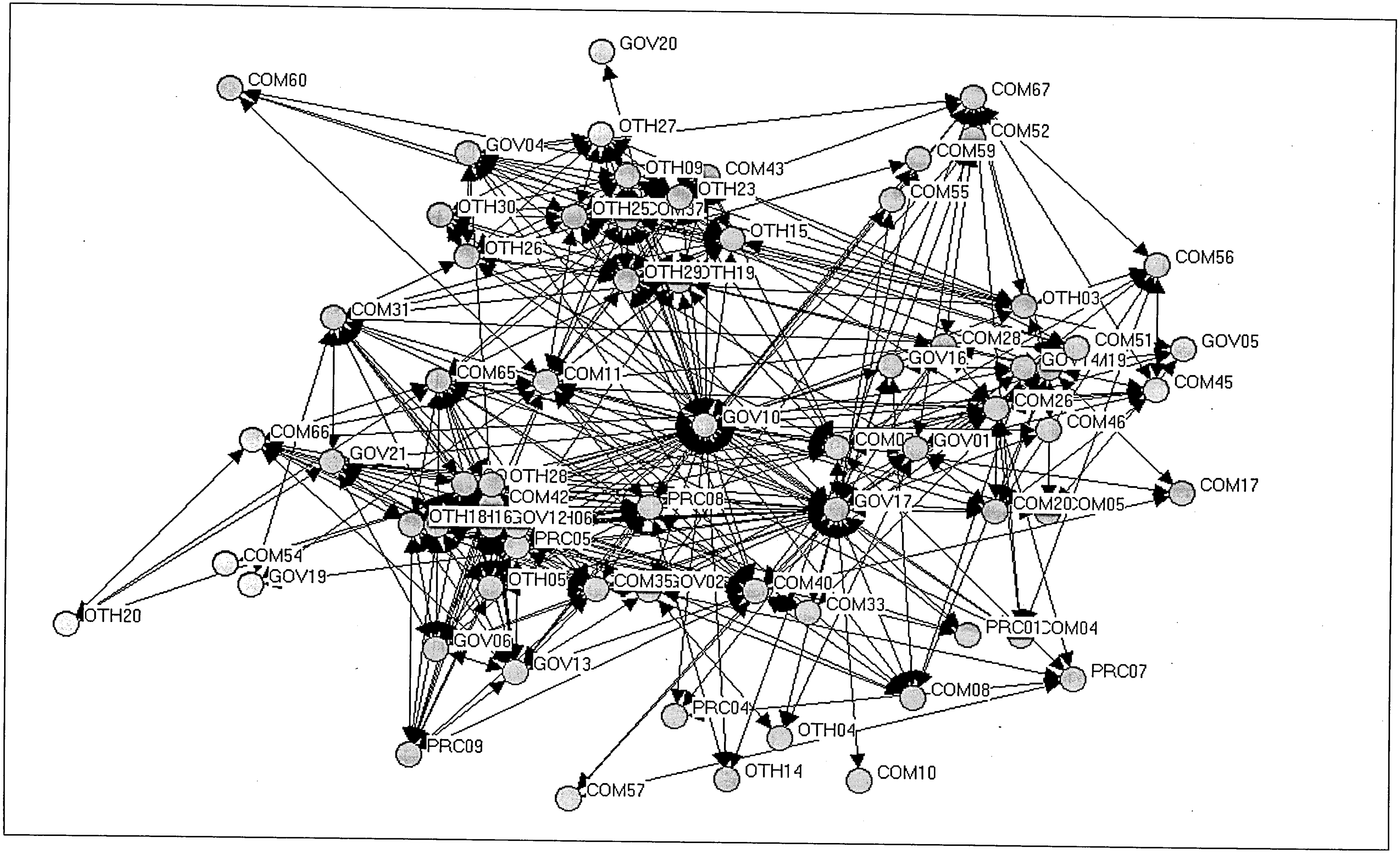
1995

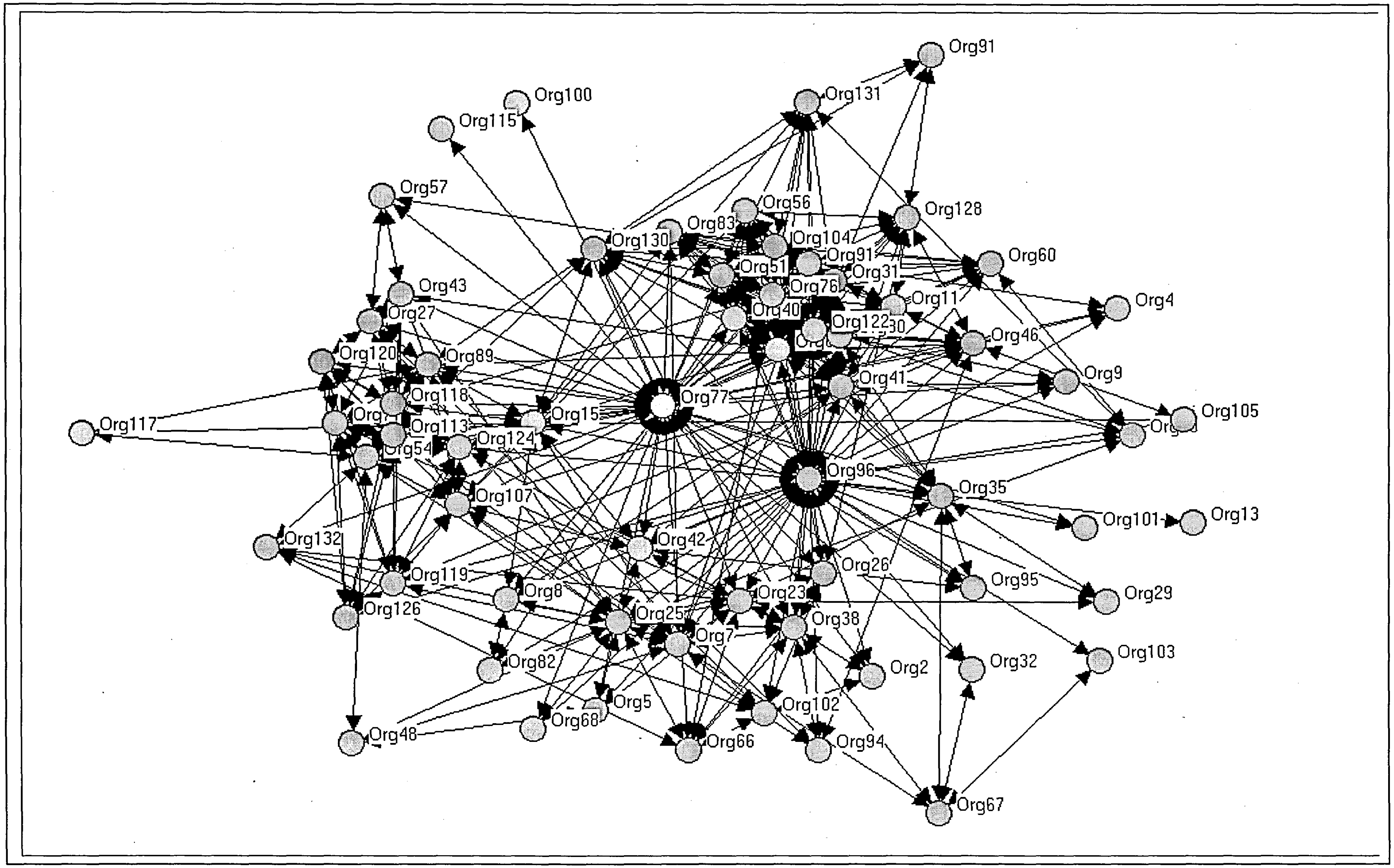

PRC04
COM46
COM20
GOV07COM17
PRC13
GOV20
COM52
COM59
COM54
OTH10
PRC01
OTH24
GOV14
GOV16
COM05
COM48
COM67
COM62
OTH14
COM55
COM19
COM28
OTH27
GOV21
GOV05
OTH03
GOV04
GOV10
GOV06
PRC06
GOV15
OTH09
OTH29
OTH25
OTH23
COM37
OTH26
OTH30
OTH19
OTH15
COM44
COM43
COM53
COM60
COM65
COM07
COM22
COM51
COM66
COM64
COM21
COM10
COM14
COM16
COM23
COM27
GOV02
OTH06
GOV13
OTH11
GOV12
OTH28
PRC08
OTH08
OTH18
COM40
PRC09
PRC03
PRC07
OTH04
PRC11
COM33
COM06
COM61
COM57

# 1996

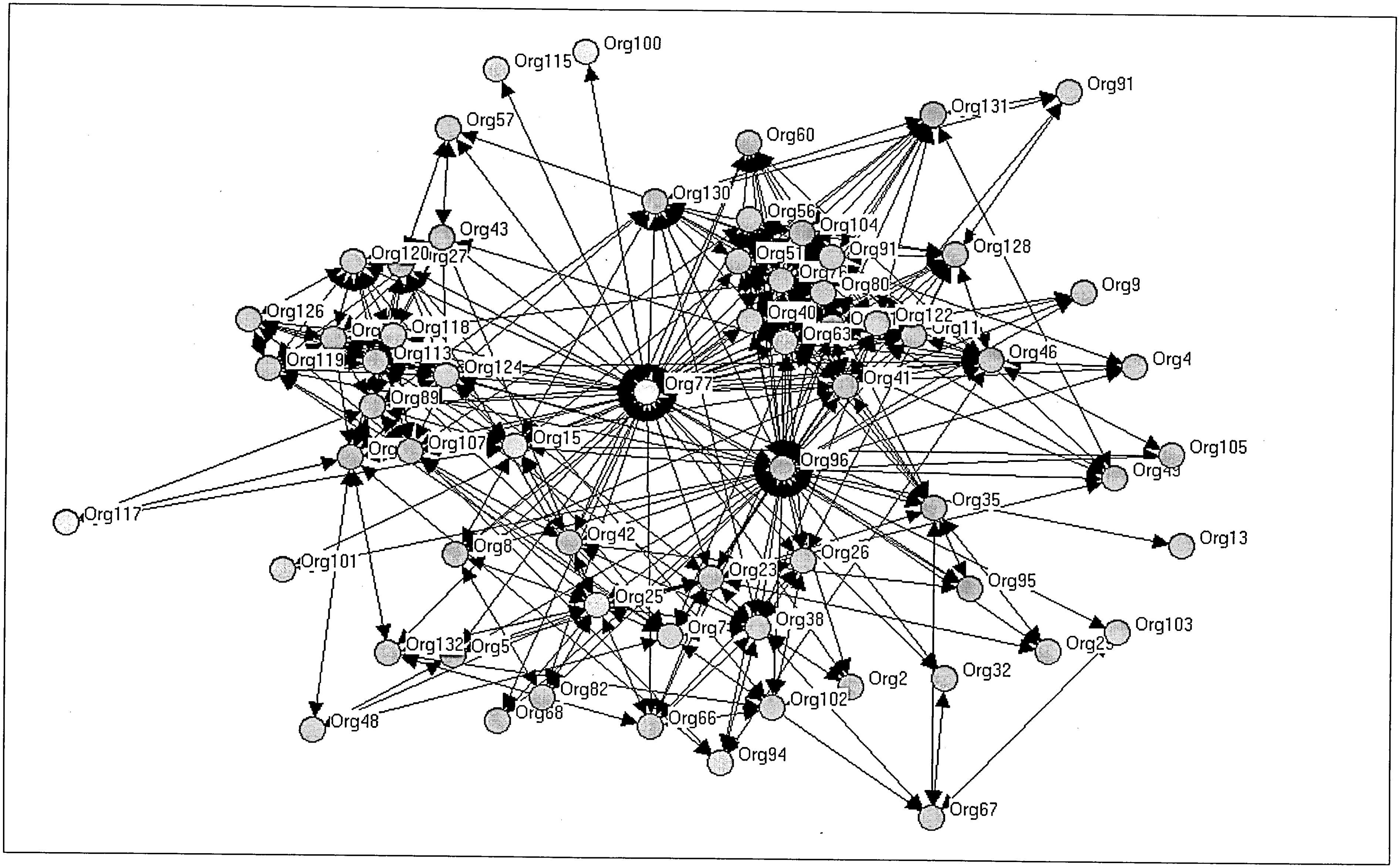

Org28
Org129
Org126
Org26
Org131
Org117
Org94
Org128
Org130
Org71
Org64
Org30
Org49
Org51
Org89
Org60
Org104
Org63
Org124
Org105
Org91
Org90
Org80
Org84
Org113
Org120
Org119
Org14
Org122
Org107
Org27
Org29
Org41
Org83
Org61
Org43
Org42
Org98
Org72
Org35
Org7
Org21
Org2
Org9
Org8
Org25
Org48
Org123
Org39
Org85
Org82
Org101
Org57
Org70
Org100
Org95
Org88
Org132
Org22
Org68
Org13
Org67
Org32
Org103
Org121
Org6
Org18

# 1997

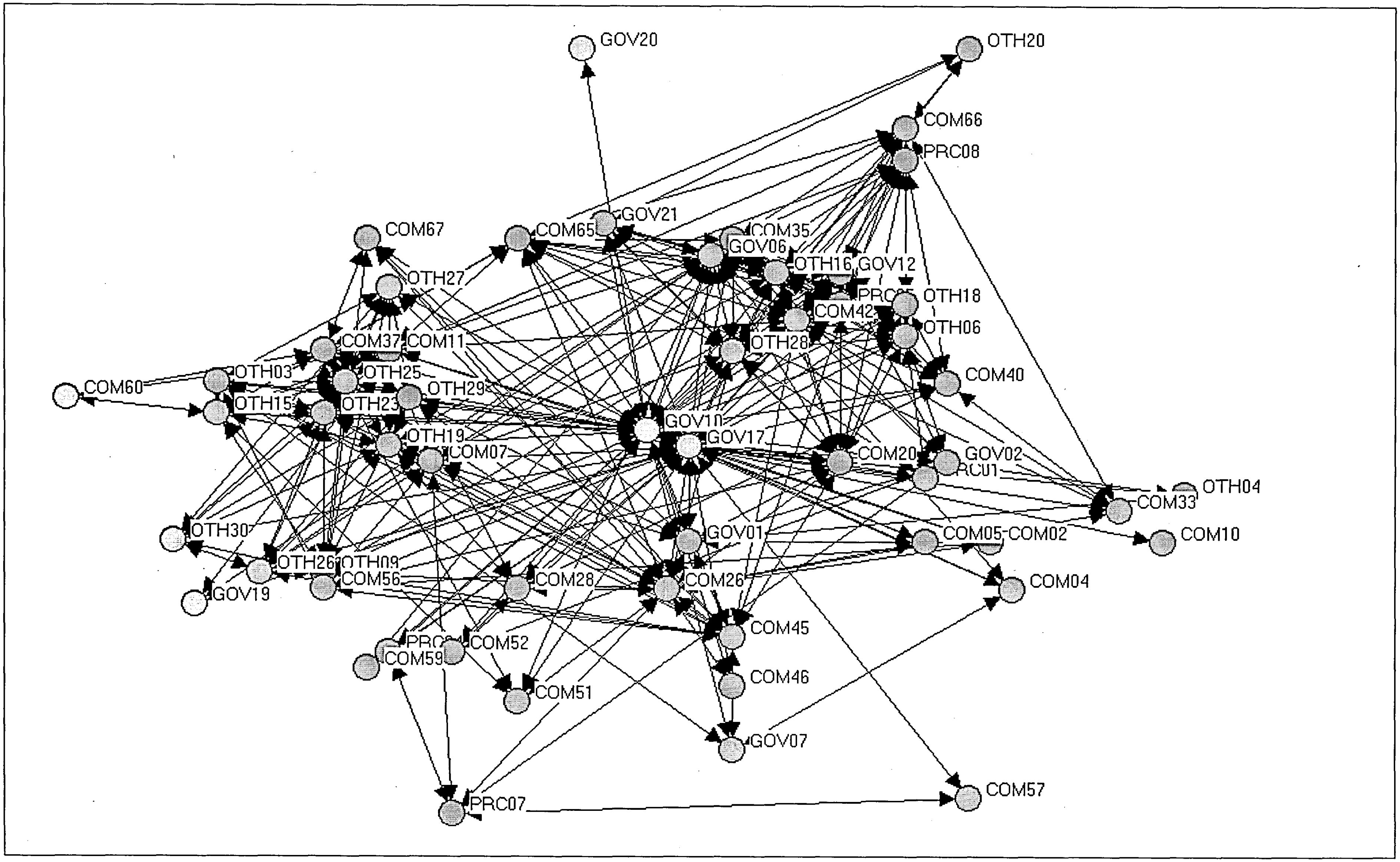

GOV20
COM60
COM67
OTH27
COM52
GOV04
COM59
OTH09
COM43
OTH23
COM55
OTH30
OTH25
COM37
OTH15
OTH26
COM56
OTH29
OTH19
OTH03
COM31
COM28
COM51
GOV05
GOV16
GOV14/19
COM65
COM11
COM45
COM26
GOV10
COM46
COM66
COM0
GOV01
GOV21
OTH28
COM17
COM42
PRC08
GOV17
OTH18
OTH16
GOV12
COM20
COM05
PRC05
COM54
GOV19
OTH05
COM35
GOV02
COM40
OTH20
COM33
PRC01
COM04
GOV06
GOV13
PRC07
COM08
PRC04
OTH04
PRC09
OTH14
COM10
COM57


Org91
Org131
Org100
Org115
Org57
Org128
Org56
Org83
Org130
Org104
Org60
Org91
Org51
Org31
Org76
Org43
Org11
Org4
Org40
Org27
Org122
Org46
Org120
Org89
Org41
Org9
Org118
Org77
Org105
Org117
Org113
Org15
Org124
Org54
Org96
Org35
Org107
Org101
Org13
Org132
Org42
Org26
Org119
Org95
Org29
Org8
Org23
Org126
Org25
Org38
Org7
Org103
Org82
Org32
Org2
Org5
Org102
Org68
Org48
Org66
Org94
Org67

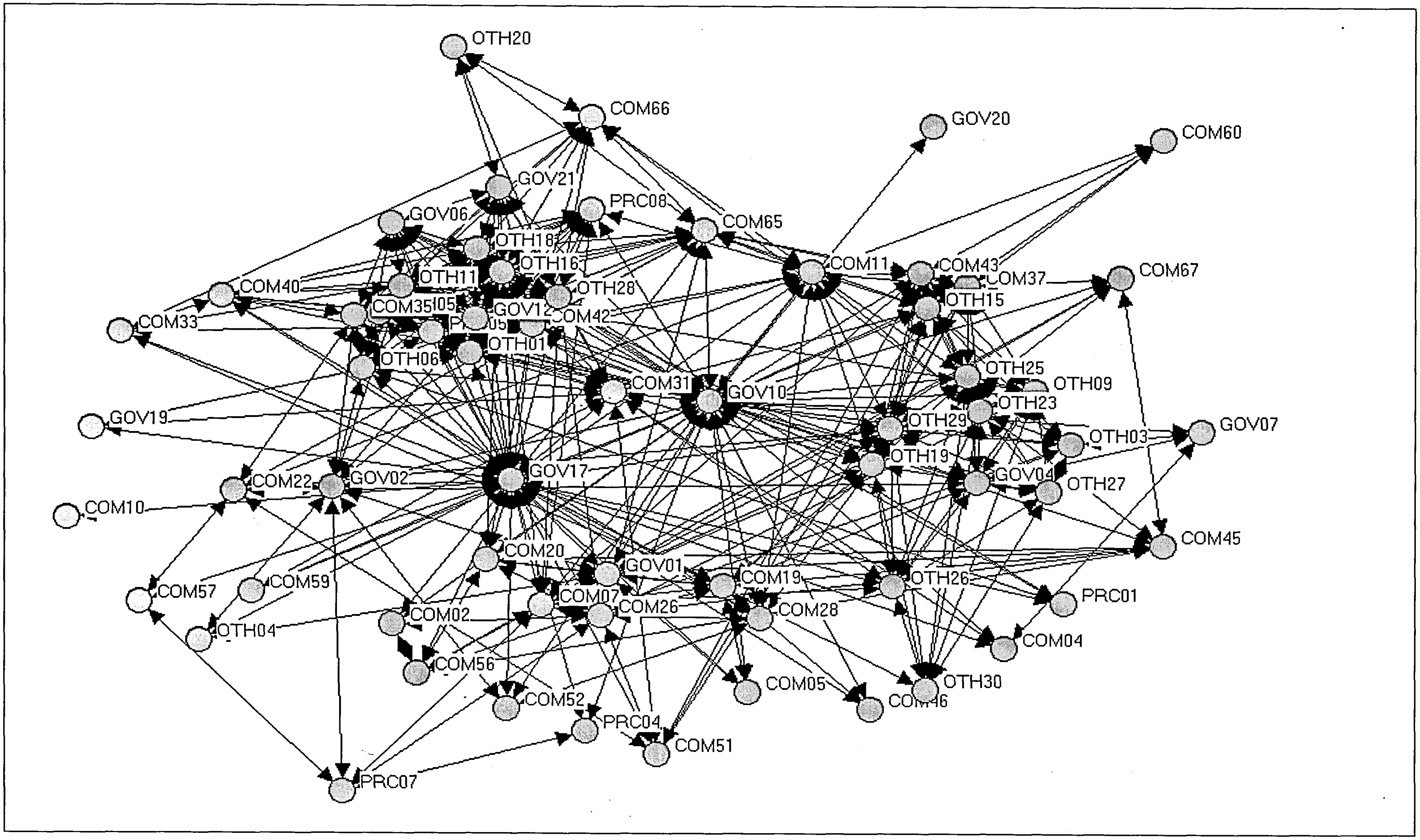
# 1999


Org100
Org115
Org91
Org131
Org57
Org60
Org130
Org56
Org104
Org43
Org91
Org128
Org120
Org27
Org51
Org80
Org9
Org126
Org40
Org122
Org118
Org63
Org46
Org4
Org113
Org119
Org124
Org77
Org41
Org89
Org107
Org15
Org96
Org105
Org117
Org35
Org13
Org42
Org8
Org101
Org26
Org23
Org95
Org25
Org38
Org103
Org7
Org132
Org5
Org32
Org2
Org82
Org102
Org48
Org66
Org94
Org67

2000


GOV20
OTH20
COM66
PRC08
GOV21
COM67
COM65
COM35
GOV06
OTH16
GOV12
OTH27
OTH18
COM42
OTH06
COM37
COM11
OTH28
COM60
OTH03
OTH25
COM40
OTH15
OTH23
OTH29
GOV10
GOV17
OTH19
COM07
COM20
GOV02
OTH04
COM33
OTH30
GOV01
COM05
COM02
COM10
OTH26
OTH09
COM56
COM28
COM26
COM04
GOV19
COM45
COM52
COM59
COM46
COM51
GOV07
COM57
PRC07

2002


OTH20
COM66
GOV20
COM60
GOV21
PRC08
COM65
GOV06
OTH18
COM11
COM43
COM37
COM67
OTH16
OTH11
OTH28
COM40
COM35
GOV12
COM42
OTH15
COM33
OTH01
OTH06
OTH25
OTH09
COM31
GOV10
OTH23
GOV07
GOV19
OTH29
OTH03
OTH19
GOV17
GOV04
OTH27
COM22
GOV02
COM10
COM45
COM20
GOV01
COM19
OTH26
PRC01
COM57
COM59
COM07
COM02
COM26
COM28
OTH04
COM04
COM56
COM05
OTH30
COM52
PRC04
COM51
PRC07

## Appendix 5 Director of Studies' Introductory letter for data collection

22nd October 2002

[redacted]

Dear [redacted]

**RE: DATA COLLECTION: CLETUS MOOBELA**

I am pleased to confirm that Cletus Moobela is a PhD Researcher at this University, supervised by myself and Professor Paul Syms. The data he is seeking is solely concerned with his thesis and can be treated in absolute confidence save for a need for it to be available in due course to two academic examiners of his thesis. I hope this enables you to grant the requested research data. I am available for a telphone conversation or to give further details should you require them.

My thanks in advance for your consideration of this request.

Yours sincerely

Prof. Ilfryn Price

# Appendix 6a Densities for 1991 to 2000 networks

```
BLOCK DENSITIES OR AVERAGES
------------------------------------------------------------------------
-----------

Input dataset:                C:\Program Files\Ucinet
6\DataFiles\HULME91


Density / average value within blocks

         1
      ------
  1  0.2984


Standard Deviations within blocks

         1
      ------
  1  0.4576

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image
matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

----------------------------------------
Running time:  00:00:01
Output generated:  21 Jun 03 17:22:46
Copyright (c) 1999-2000 Analytic Technologies


------------------------------------------------------------------------
-----------

Input dataset:                C:\Program Files\Ucinet
6\DataFiles\HULME92


Density / average value within blocks

         1
      ------
  1  0.3333


Standard Deviations within blocks

         1
      ------
  1  0.4714

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image
matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
```

```
Actor-by-actor pre-image matrix saved as dataset DensityModel

----------------------------------------
Running time:  00:00:01
Output generated:  21 Jun 03 17:24:06
Copyright (c) 1999-2000 Analytic Technologies

BLOCK DENSITIES OR AVERAGES
--------------------------------------------------------------------
-----------

Input dataset:                 C:\Program Files\Ucinet
6\DataFiles\HULME93


Density / average value within blocks

         1
     ------
  1  0.2134


Standard Deviations within blocks

         1
     ------
  1  0.4639

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image
matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

----------------------------------------
Running time:  00:00:01
Output generated:  21 Jun 03 17:25:13
Copyright (c) 1999-2000 Analytic Technologies


BLOCK DENSITIES OR AVERAGES
--------------------------------------------------------------------
-----------

Input dataset:                 C:\Program Files\Ucinet
6\DataFiles\HULME94


Density / average value within blocks

         1
     ------
  1  0.2271


Standard Deviations within blocks

         1
     ------
  1  0.4189
```

```
Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image
matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

----------------------------------------
Running time:  00:00:01
Output generated:  21 Jun 03 17:26:03
Copyright (c) 1999-2000 Analytic Technologies


BLOCK DENSITIES OR AVERAGES
----------------------------------------------------------------------
-----------

Input dataset:                C:\Program Files\Ucinet
6\DataFiles\HULME95


Density / average value within blocks

         1
      ------
  1  0.2021


Standard Deviations within blocks

         1
      ------
  1  0.3446

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image
matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

----------------------------------------
Running time:  00:00:01
Output generated:  21 Jun 03 17:26:44
Copyright (c) 1999-2000 Analytic Technologies


BLOCK DENSITIES OR AVERAGES
----------------------------------------------------------------------
-----------

Input dataset:                C:\Program Files\Ucinet
6\DataFiles\HULME96


Density / average value within blocks

         1
      ------
  1  0.1578


Standard Deviations within blocks
```

```
        1
      ------
  1  0.3549
```

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

----------------------------------------
Running time: 00:00:01
Output generated: 21 Jun 03 17:27:23
Copyright (c) 1999-2000 Analytic Technologies

BLOCK DENSITIES OR AVERAGES
--------------------------------------------------------------------------------

Input dataset: C:\Program Files\Ucinet 6\DataFiles\HULME97

Density / average value within blocks

```
        1
      ------
  1  0.1599
```

Standard Deviations within blocks

```
        1
      ------
  1  0.3666
```

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

----------------------------------------
Running time: 00:00:01
Output generated: 21 Jun 03 17:28:03
Copyright (c) 1999-2000 Analytic Technologies

BLOCK DENSITIES OR AVERAGES
--------------------------------------------------------------------------------

Input dataset: C:\Program Files\Ucinet 6\DataFiles\HULME98

Density / average value within blocks

```
        1
      ------
  1  0.1702
```

Standard Deviations within blocks

```
         1
     ------
  1  0.3758
```

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

```
----------------------------------------
```

Running time: 00:00:01
Output generated: 21 Jun 03 17:28:59
Copyright (c) 1999-2000 Analytic Technologies

BLOCK DENSITIES OR AVERAGES

```
----------------------------------------------------------------------
-----------
```

Input dataset: C:\Program Files\Ucinet 6\DataFiles\HULME99

Density / average value within blocks

```
         1
     ------
  1  0.1683
```

Standard Deviations within blocks

```
         1
     ------
  1  0.3741
```

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

```
----------------------------------------
```

Running time: 00:00:01
Output generated: 21 Jun 03 17:29:49
Copyright (c) 1999-2000 Analytic Technologies

LOCK DENSITIES OR AVERAGES

```
----------------------------------------------------------------------
-----------
```

Input dataset: C:\Program Files\Ucinet 6\DataFiles\HULME00

Density / average value within blocks

```
        1
     ------
  1  0.1856


Standard Deviations within blocks

        1
     ------
  1  0.3888

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image
matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel

----------------------------------------
Running time:  00:00:01
Output generated:  21 Jun 03 17:30:35
```

Copyright (c) 1999-2000 Analytic Technologies

## Appendix 6b Cliques for 2002 networks

```
CLIQUES
---------------------------------------------------------------------------
-----------

Minimum Set Size:           3
Input dataset:              C:\Program Files\Ucinet
6\DataFiles\HULME02

WARNING: Directed graph. Direction of arcs ignored.
112 cliques found.

   1:  OTH05 PRC05 COM35 COM42 OTH11 GOV10 GOV12 OTH16 GOV17 OTH18
OTH28
   2:  PRC05 COM35 GOV06 COM42 OTH11 GOV10 GOV12 OTH16 GOV17 OTH18
OTH28
   3:  COM35 COM40 COM42 OTH11 GOV10 GOV12 OTH16 GOV17 OTH18
   4:  PRC05 OTH06 COM35 GOV06 COM42 OTH11 GOV10 GOV12 GOV17 OTH18
OTH28
   5:  OTH05 PRC05 OTH06 COM35 COM42 OTH11 GOV10 GOV12 GOV17 OTH18
OTH28
   6:  GOV02 OTH06 COM35 COM42 OTH11 GOV10 GOV12 GOV17
   7:  COM35 COM42 GOV10 GOV12 OTH16 GOV17 OTH18 OTH28 COM65
   8:  OTH01 PRC05 COM31 COM42 GOV10 GOV12 OTH16 GOV17 OTH28
   9:  OTH01 OTH05 PRC05 OTH06 COM42 OTH11 GOV10 GOV12 GOV17 OTH18
OTH28
  10:  OTH01 OTH05 PRC05 COM42 OTH11 GOV10 GOV12 OTH16 GOV17 OTH18
OTH28
  11:  COM11 COM42 GOV10 GOV17 COM65
  12:  COM20 COM42 GOV10 GOV17 GOV21
  13:  OTH01 OTH05 COM42 GOV10 OTH16 GOV17 OTH18 OTH28 GOV21
  14:  OTH01 COM31 COM42 GOV10 OTH16 GOV17 OTH28 GOV21
  15:  GOV06 COM42 GOV10 OTH16 GOV17 OTH18 OTH28 GOV21
  16:  PRC01 OTH06 GOV10 GOV17 OTH28
  17:  GOV01 COM20 GOV10 GOV17
  18:  GOV01 GOV02 GOV10 GOV17
  19:  COM05 GOV01 GOV10 GOV17
  20:  GOV01 GOV10 GOV17 OTH29
  21:  PRC04 GOV10 GOV17
  22:  COM11 COM28 GOV10 GOV17
  23:  COM28 COM40 GOV10 GOV17
  24:  COM28 GOV10 COM52 GOV17
  25:  COM46 GOV10 GOV17
  26:  COM02 GOV10 GOV17
  27:  GOV02 GOV10 COM52 GOV17
  28:  COM04 COM31 GOV10 GOV17
  29:  COM31 GOV10 GOV17 COM59
  30:  COM11 GOV10 GOV17 OTH29
  31:  OTH03 GOV04 GOV10 OTH23 OTH25 OTH27 OTH29
  32:  OTH03 GOV04 GOV07 GOV10
  33:  OTH03 GOV10 OTH15 OTH23 OTH25 OTH29
  34:  GOV04 OTH09 GOV10 OTH23 OTH25 OTH27 OTH29
  35:  GOV04 COM42 GOV10
  36:  COM11 COM37 COM43 GOV10 OTH15 OTH19 OTH25 OTH29
  37:  COM11 COM37 COM43 GOV10 OTH15 OTH23 OTH25 OTH29
  38:  COM11 COM37 COM43 GOV10 OTH15 COM65
  39:  COM37 COM43 OTH09 GOV10 OTH15 OTH23 OTH25 OTH29
  40:  COM37 GOV10 COM67
```

41: COM04 GOV07 GOV10
42: GOV01 COM20 COM45 GOV10
43: GOV01 COM45 GOV10 COM67
44: OTH09 OTH11 GOV10
45: OTH01 OTH05 PRC05 OTH06 COM42 OTH11 GOV10 GOV12 PRC08 OTH18 OTH28
46: OTH05 PRC05 OTH06 COM35 COM42 OTH11 GOV10 GOV12 PRC08 OTH18 OTH28
47: OTH01 OTH05 PRC05 COM42 OTH11 GOV10 GOV12 PRC08 OTH16 OTH18 OTH28
48: OTH05 PRC05 COM35 COM42 OTH11 GOV10 GOV12 PRC08 OTH16 OTH18 OTH28
49: COM35 COM40 COM42 OTH11 GOV10 GOV12 PRC08 OTH16 OTH18
50: COM11 COM42 GOV10 PRC08
51: COM31 GOV10 OTH15 OTH19
52: GOV10 OTH19 OTH25 OTH27 OTH29
53: GOV06 GOV10 OTH19
54: COM11 COM28 GOV10 OTH19
55: COM07 GOV01 COM19 COM26 GOV17
56: COM07 COM26 GOV17 OTH28
57: COM07 OTH16 GOV17 OTH28
58: COM07 COM11 GOV17
59: COM07 GOV17 COM56
60: COM07 GOV17 OTH26
61: COM07 COM11 COM43 OTH19
62: COM07 COM11 COM43 OTH23
63: COM07 COM26 PRC07
64: COM07 PRC08 OTH16 OTH28
65: COM07 COM11 PRC08
66: COM07 OTH19 OTH26
67: COM07 COM19 OTH19
68: COM07 OTH23 OTH26
69: GOV01 COM19 COM20 COM26 GOV17
70: COM05 GOV01 COM19 GOV17
71: COM19 COM26 COM28 GOV17
72: COM19 COM33 GOV17
73: COM19 COM46 GOV17
74: COM19 OTH03 GOV04
75: GOV01 COM19 COM20 COM26 COM45
76: GOV01 COM19 COM45 COM67
77: COM19 COM28 OTH19
78: GOV01 OTH04 GOV02 GOV17
79: COM22 GOV02 COM35 GOV17
80: COM22 COM35 GOV17 COM65
81: COM22 COM51 GOV17
82: COM11 COM22 GOV17 OTH29
83: COM11 COM22 GOV17 COM65
84: COM22 GOV17 COM57
85: COM22 GOV04 OTH29
86: COM26 GOV17 OTH28 COM65
87: COM02 COM26 GOV17
88: COM26 COM51 GOV17
89: COM33 COM40 COM42 GOV17
90: COM33 COM42 GOV17 COM65
91: COM33 COM42 COM65 COM66
92: COM37 COM43 OTH15 COM51
93: COM31 OTH15 COM51
94: COM31 COM51 GOV17
95: COM20 COM45 COM56
96: COM45 COM56 COM67
97: COM02 GOV17 COM56

```
 98:   COM20 GOV17 COM56
 99:   COM11 GOV17 GOV19
100:   COM31 GOV17 GOV19
101:   OTH20 OTH28 COM65 COM66
102:   OTH20 OTH28 GOV21
103:   COM11 COM37 COM43 OTH15 COM60
104:   GOV04 OTH09 OTH23 OTH25 OTH26 OTH27 OTH29
105:   OTH09 OTH23 OTH25 OTH26 OTH27 OTH29 OTH30
106:   OTH19 OTH25 OTH26 OTH27 OTH29 OTH30
107:   GOV17 OTH26 OTH29 OTH30
108:   COM31 GOV17 OTH26
109:   COM31 OTH19 OTH26
110:   COM35 COM42 OTH11 GOV12 OTH16 OTH18 OTH28 COM66
111:   COM35 COM42 GOV12 OTH16 OTH18 OTH28 COM65 COM66
112:   COM11 COM42 COM65 COM66
```

Clique-by-Clique co-membership matrix saved as dataset Clique-by-cliqueOverlap
Clique by clustering partition matrix saved as dataset Clique-by-partition

----------------------------------------
Running time:  00:00:04
Output generated:  21 Jun 03 17:32:27
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# Appendix 6c Degree centralities for 2002 networks

```
FREEMAN'S DEGREE CENTRALITY MEASURES:
------------------------------------------------------------------------
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Diagonal valid?               NO
Model:                        SYMMETRIC
Input dataset:                C:\Program Files\Ucinet
6\DataFiles\HULME02
```

| | | 1 Degree | 2 NrmDegree | 3 Share |
|---|---|---|---|---|
| 37 | GOV10 | 46.000 | 73.016 | 0.062 |
| 44 | GOV17 | 44.000 | 69.841 | 0.059 |
| 30 | COM42 | 24.000 | 38.095 | 0.032 |
| 58 | OTH28 | 22.000 | 34.921 | 0.029 |
| 41 | OTH16 | 19.000 | 30.159 | 0.025 |
| 38 | GOV12 | 19.000 | 30.159 | 0.025 |
| 47 | OTH18 | 18.000 | 28.571 | 0.024 |
| 25 | COM35 | 18.000 | 28.571 | 0.024 |
| 8 | COM11 | 18.000 | 28.571 | 0.024 |
| 36 | OTH11 | 18.000 | 28.571 | 0.024 |
| 59 | OTH29 | 17.000 | 26.984 | 0.023 |
| 62 | COM65 | 17.000 | 26.984 | 0.023 |
| 23 | COM31 | 16.000 | 25.397 | 0.021 |
| 49 | OTH19 | 15.000 | 23.810 | 0.020 |
| 19 | PRC05 | 15.000 | 23.810 | 0.020 |
| 20 | OTH06 | 15.000 | 23.810 | 0.020 |
| 39 | PRC08 | 15.000 | 23.810 | 0.020 |
| 10 | COM19 | 14.000 | 22.222 | 0.019 |
| 51 | OTH23 | 14.000 | 22.222 | 0.019 |
| 40 | OTH15 | 14.000 | 22.222 | 0.019 |
| 15 | OTH05 | 14.000 | 22.222 | 0.019 |
| 6 | OTH01 | 14.000 | 22.222 | 0.019 |
| 55 | OTH25 | 14.000 | 22.222 | 0.019 |
| 4 | COM07 | 14.000 | 22.222 | 0.019 |
| 27 | GOV06 | 13.000 | 20.635 | 0.017 |
| 18 | COM26 | 13.000 | 20.635 | 0.017 |
| 35 | OTH09 | 13.000 | 20.635 | 0.017 |
| 26 | COM37 | 13.000 | 20.635 | 0.017 |
| 31 | COM43 | 13.000 | 20.635 | 0.017 |
| 22 | GOV04 | 12.000 | 19.048 | 0.016 |
| 61 | GOV21 | 12.000 | 19.048 | 0.016 |
| 17 | GOV02 | 12.000 | 19.048 | 0.016 |
| 9 | GOV01 | 12.000 | 19.048 | 0.016 |
| 63 | COM66 | 12.000 | 19.048 | 0.016 |
| 56 | OTH26 | 11.000 | 17.460 | 0.015 |
| 29 | COM40 | 11.000 | 17.460 | 0.015 |
| 12 | OTH03 | 10.000 | 15.873 | 0.013 |
| 57 | OTH27 | 10.000 | 15.873 | 0.013 |
| 14 | COM22 | 9.000 | 14.286 | 0.012 |
| 11 | COM20 | 9.000 | 14.286 | 0.012 |
| 32 | COM45 | 8.000 | 12.698 | 0.011 |
| 60 | OTH30 | 8.000 | 12.698 | 0.011 |
| 21 | COM28 | 8.000 | 12.698 | 0.011 |
| 42 | COM51 | 7.000 | 11.111 | 0.009 |
| 45 | COM56 | 7.000 | 11.111 | 0.009 |
| 64 | COM67 | 6.000 | 9.524 | 0.008 |

| | | | | |
|---|---|---|---|---|
| 24 | COM33 | 6.000 | 9.524 | 0.008 |
| 33 | PRC07 | 5.000 | 7.937 | 0.007 |
| 2 | COM04 | 4.000 | 6.349 | 0.005 |
| 50 | OTH20 | 4.000 | 6.349 | 0.005 |
| 5 | PRC01 | 4.000 | 6.349 | 0.005 |
| 28 | GOV07 | 4.000 | 6.349 | 0.005 |
| 1 | COM02 | 4.000 | 6.349 | 0.005 |
| 54 | COM60 | 4.000 | 6.349 | 0.005 |
| 3 | COM05 | 4.000 | 6.349 | 0.005 |
| 43 | COM52 | 4.000 | 6.349 | 0.005 |
| 16 | PRC04 | 3.000 | 4.762 | 0.004 |
| 34 | COM46 | 3.000 | 4.762 | 0.004 |
| 13 | OTH04 | 3.000 | 4.762 | 0.004 |
| 52 | COM59 | 3.000 | 4.762 | 0.004 |
| 46 | COM57 | 3.000 | 4.762 | 0.004 |
| 48 | GOV19 | 3.000 | 4.762 | 0.004 |
| 53 | GOV20 | 1.000 | 1.587 | 0.001 |
| 7 | COM10 | 1.000 | 1.587 | 0.001 |

DESCRIPTIVE STATISTICS

| | | 1<br>Degree | 2<br>NrmDegree | 3<br>Share |
|---|---|---|---|---|
| 1 | Mean | 11.656 | 18.502 | 0.000 |
| 2 | Std Dev | 8.178 | 12.981 | 0.000 |
| 3 | Sum | 746.000 | 1184.127 | 0.000 |
| 4 | Variance | 66.882 | 168.511 | 0.000 |
| 5 | SSQ | 12976.000 | 32693.373 | 0.000 |
| 6 | MCSSQ | 4280.437 | 10784.676 | 0.000 |
| 7 | Euc Norm | 113.912 | 180.813 | 0.000 |
| 8 | Minimum | 1.000 | 1.587 | 0.000 |
| 9 | Maximum | 46.000 | 73.016 | 0.000 |

Network Centralization = 56.27%
Homogeneity = 2.33%

NOTE: For valued data, both the normalized centrality and the centralization index may be larger than 100%.

Actor-by-centrality matrix saved as dataset FreemanDegree

----------------------------------------

Running time: 00:00:01
Output generated: 21 Jun 03 17:35:25
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## Appendix 6d Betweenness centralities for 2002 networks

FREEMAN BETWEENNESS CENTRALITY
------------------------------------------------------------------------------

Input dataset: C:\Program Files\Ucinet 6\DataFiles\HULME02

Important note: this routine binarizes but does NOT symmetrize.

Un-normalized centralization: 66545.578

| | | 1<br>Betweenness | 2<br>nBetweenness |
|---|---|---|---|
| 1 | COM02 | 1.825 | 0.047 |
| 2 | COM04 | 6.051 | 0.155 |
| 3 | COM05 | 0.364 | 0.009 |
| 4 | COM07 | 88.236 | 2.259 |
| 5 | PRC01 | 0.000 | 0.000 |
| 6 | OTH01 | 3.234 | 0.083 |
| 7 | COM10 | 0.000 | 0.000 |
| 8 | COM11 | 140.809 | 3.605 |
| 9 | GOV01 | 41.805 | 1.070 |
| 10 | COM19 | 67.374 | 1.725 |
| 11 | COM20 | 12.803 | 0.328 |
| 12 | OTH03 | 25.696 | 0.658 |
| 13 | OTH04 | 0.000 | 0.000 |
| 14 | COM22 | 30.263 | 0.775 |
| 15 | OTH05 | 2.324 | 0.059 |
| 16 | PRC04 | 11.042 | 0.283 |
| 17 | GOV02 | 57.796 | 1.480 |
| 18 | COM26 | 67.790 | 1.736 |
| 19 | PRC05 | 3.300 | 0.084 |
| 20 | OTH06 | 10.252 | 0.262 |
| 21 | COM28 | 11.865 | 0.304 |
| 22 | GOV04 | 34.155 | 0.874 |
| 23 | COM31 | 70.548 | 1.806 |
| 24 | COM33 | 5.784 | 0.148 |
| 25 | COM35 | 24.812 | 0.635 |
| 26 | COM37 | 41.878 | 1.072 |
| 27 | GOV06 | 9.771 | 0.250 |
| 28 | GOV07 | 2.000 | 0.051 |
| 29 | COM40 | 10.721 | 0.274 |
| 30 | COM42 | 82.217 | 2.105 |
| 31 | COM43 | 33.444 | 0.856 |
| 32 | COM45 | 16.466 | 0.422 |
| 33 | PRC07 | 8.842 | 0.226 |
| 34 | COM46 | 0.364 | 0.009 |
| 35 | OTH09 | 32.078 | 0.821 |
| 36 | OTH11 | 30.853 | 0.790 |
| 37 | GOV10 | 1097.243 | 28.091 |
| 38 | GOV12 | 19.356 | 0.496 |
| 39 | PRC08 | 14.571 | 0.373 |
| 40 | OTH15 | 44.618 | 1.142 |
| 41 | OTH16 | 23.620 | 0.605 |
| 42 | COM51 | 12.183 | 0.312 |

| | | | |
|---|---|---|---|
| 43 | COM52 | 0.667 | 0.017 |
| 44 | GOV17 | 1023.369 | 26.200 |
| 45 | COM56 | 14.886 | 0.381 |
| 46 | COM57 | 5.229 | 0.134 |
| 47 | OTH18 | 12.767 | 0.327 |
| 48 | GOV19 | 0.333 | 0.009 |
| 49 | OTH19 | 45.943 | 1.176 |
| 50 | OTH20 | 0.686 | 0.018 |
| 51 | OTH23 | 21.463 | 0.549 |
| 52 | COM59 | 0.000 | 0.000 |
| 53 | GOV20 | 0.000 | 0.000 |
| 54 | COM60 | 0.153 | 0.004 |
| 55 | OTH25 | 14.985 | 0.384 |
| 56 | OTH26 | 18.515 | 0.474 |
| 57 | OTH27 | 4.517 | 0.116 |
| 58 | OTH28 | 88.447 | 2.264 |
| 59 | OTH29 | 53.386 | 1.367 |
| 60 | OTH30 | 7.096 | 0.182 |
| 61 | GOV21 | 29.541 | 0.756 |
| 62 | COM65 | 100.963 | 2.585 |
| 63 | COM66 | 28.791 | 0.737 |
| 64 | COM67 | 7.913 | 0.203 |

DESCRIPTIVE STATISTICS FOR EACH MEASURE

| | | 1<br>Betweenness | 2<br>nBetweenness |
|---|---|---|---|
| 1 | Mean | 57.469 | 1.471 |
| 2 | Std Dev | 182.533 | 4.673 |
| 3 | Sum | 3678.000 | 94.163 |
| 4 | Variance | 33318.336 | 21.838 |
| 5 | SSQ | 2343743.500 | 1536.192 |
| 6 | MCSSQ | 2132373.500 | 1397.651 |
| 7 | Euc Norm | 1530.929 | 39.194 |
| 8 | Minimum | 0.000 | 0.000 |
| 9 | Maximum | 1097.243 | 28.091 |

Network Centralization Index = 27.04%

Output actor-by-centrality measure matrix saved as dataset FreemanBetweenness

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Running time: 00:00:01
Output generated: 21 Jun 03 17:36:54
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# Moss Side & Hulme and A6 Partnership
# Team Meeting

## TUESDAY 27TH FEBRUARY 2001
## 12.15pm - Alexandra House

# AGENDA

| | | |
|---|---|---|
| 1. | Presentation by Cletus Moobela - Sheffield | |
| 2. | Staffing & Personnel | (BM) |
| 3. | Taxi Authorisation Forms | (MJ) |
| 4. | Customer Care Standards & Monitoring | (PB) |
| 5. | Student Placement Scheme | (PP) |

669/MJ
27 February 2001