An Exploratory Analysis and Synthesis of the Viability of Groups with Salient Social Identities Using Stafford Beer’s VSM Model

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ABSTRACT

Social groups are a fundamental part of our lives. From early beginnings humans lived in family groups and formed 'tribes' that not only provided protection from the many dangers they faced but by combining their efforts humans learnt that a group could be more than the 'sum of its parts'. Collective action has, and still, provides the basis for much of human activity, while shared knowledge contributes equally to the advancement of humankind. 

Study into groups has revealed that humans instinctively know when cooperation is the best strategy and that not only is collective action often more efficient and effective than that of independent effort but that groups are good problem solving mechanisms, often making better decisions than individuals through the use of 'collective mindfulness' and a group 'trans-active' memory. People do not just create a group memory, there is evidence they also 'become' the group. As social integration rises, people feel, think, and act more like group members. They automatically associate themselves with the groups that they identify with. Tajfel and Turner's theory of Social Identity suggests that people not only join groups but take on the 'group identity' as their own self-image in a process of 'depersonalization'. To achieve effective collective action requires more than just 'being' and 'feeling' part of a group. Effective cooperation requires cohesion between group members, good communication and a coherent purpose or goal. Social Identity Theory does not provide evidence of how these mechanisms work other than to identify the formation of group norms. For that we have to turn to cybernetics, the study of 'purposeful action' and Stafford Beer's Viable Systems Model in particular. The Viable Systems Model provides an epistemology for examining the viability of systems. Viability is the ability of systems to achieve cohesion and coherence through autonomy, recursivity and ultimately closure with their environment.

This study brings together these two powerful theories to create a more complete picture of purposeful collective action and group membership. By building a Viable Systems Model of salient social groups the research provides a mechanism to understand how individual human social behaviours form and maintain purposeful social groups capable of self-awareness, self-maintenance and the ability to sustain their identity, autonomous from perturbations in the environment. Not every social group is able to maintain viability. Many groups form and expire as the circumstances dictate. Only a few are able to achieve organisational closure from their environment and sustain their identity, This research seeks to identify what is meant by social viability and what factors make some groups achieve it while others do not. It investigates the formation of social groups under different environmental conditions in order to 'tease-out' the invariances that contribute to viability and it tests the validity of the Viable Systems Model of Social Identity Theory developed for the study. In order to answer the research question the study had to address the difficult issue of conducting research on complex social systems and to utilises a process of deduction, induction and abductive reasoning through both analysis and synthesis to achieve its findings.
ACKNOWLEDGEMENTS

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DECLARATION

Whilst registered as a candidate for the above degree I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award. (Word count 88,263)
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CHAPTER 1 – INTRODUCTION

“The Viability of Social Identity Theory and the Identity of Social Viability”

1.1 Aim of the Chapter

The aim of this chapter is to introduce this research into the viability of social groups. It provides an overview of the work; starting with the personal reasons for wishing to conduct the research and examining the disciplines where there are deposits of knowledge and perspectives on the subject of social collectives. It identifies and summarises the principle theories that the research will use and states the research question, its aim and the research objectives. The chapter then identifies the problems of research into complex social systems and suggests the methodologies available to the study. The introduction concludes with a brief history of the research and an overview of each chapter.

1.2 Background

Since 1991 I have been involved in change management; attempting to restructure and organise in order to react to the changing world. In undertaking these projects I have become increasingly aware of the power of social groups within organisations to influence the agenda for change. These social groups could be well established ‘tribes’ universally recognised and aligned within the structure of the organisation or alternatively, they could emerge from across its divisions to create a coordinated response whenever a shared threat was thought to exist. They were often able to thwart or modify the change programme to their own ends. They were very quick to adapt and able to change faster than the organisation’s formal management structure could cope with them. The more established ‘tribes’ worked hard to gain influence and power, attempting to head off similar actions from rival groups. In the worst cases the management of the organisation was itself a ‘tribe’, often ‘elitist’ and running the organisation as a ‘fiefdom’ through ‘fear and favour’.

When I started to research these groups, I looked around for theories that would fit their purpose and behaviour. I found an extensive body of knowledge; groups, or at least mans’ ability to form collectives, have been studied in one way or another in philosophy, anthropology, psychology, sociology, business culture, political and organisational studies, social systems theory, by economists and in literature. However, the most compelling theory that I found, at least the one that fitted my perception of what I was seeing for myself, was Social Identity Theory (Tajfel and Turner, 1986) from psychology. This theory explains how individuals ‘form’ into groups and how and why those groups react to threats. What it did not explain was how some of these groups achieve ‘enduring salience’ to their members while others died away. The answer to that problem appeared to me to lie with Stafford Beer’s
Viable Systems Model (VSM) (1972, 1979); a method of looking holistically at systems to assess their ability to remain viable with their environment; that is to maintain their identity.

The combination of these two theories provided me with the question “are groups with salient social identities viable systems”? The interesting detail to me was that while Social Identity Theory went to great lengths to examine the dynamic processes of identity formation it did not examine identity stability, in fact its very philosophy and construct appeared to deny it.

Would the answer to this problem provide a solution to my original quest to understand the development and sustainability of groups? The more I examined the theories the more it became apparent to me that there were close similarities between the two. Self-categorization appeared to closely resemble a self-reflective homeostatic attenuation process, while the cohesion and coherence of group alignment to a group prototype seemed to mirror the mechanisms of System 2 and 3 in the VSM.

This research is borne out of a desire to find out.

1.3 The Study of Social Groups

Groups are a basic component of human social organisation and behaviour. They form the basis of our collective action, social power, shared knowledge, beliefs and values; they are the foundation of our social structures and our society. Some groups provide mutual support and are self-sustaining while others are not; some are hierarchical while others democratic, some groups combine to form larger collectives while others stay fiercely independent. Within the structures of organisations, social groups can be self-creating and self-steering. They do not necessarily adhere to the defined organisational structure but may cut across the organisational divisions. They form under almost any context imaginable; gender, race, age, shared interest, traits, protection, mutual admiration and they are the subject of our stereotypes, prejudices and rivalries.

A significant body of research on social groups has been carried out, in one form or another, by a wide range of intellectual disciplines; sometimes as organisations and sometimes as ‘community structures’. Unfortunately, it is hard to achieve a common definition of a ‘group’ from this work. The functionalist view, repeated in many of the disciplines, is that groups and organisations are some form of ‘social entity’ that is organized in a “structured system”, with a “collective purpose”;

“…a structured social system consisting of groups and individuals working together to meet some agreed objectives” (Greenberg and Baron, 1995, p11).
The constructivists and postmodernists, however, adopt very different definitions. The constructivist believe that knowledge is ‘constructed’ through life experience rather than discovered as an ‘absolute truth’ (Maturana and Varela 1986, von Foerster 1984, von Glaserfeld 1984), and hold a viewpoint of groups that relates to the ‘meaning of the human activity involved’. Checkland (1981) defines groups as;


Postmodernists, on the other hand, do not believe that any formal structure exists at all (Cooper and Burrell 1988; Foucault, 1973; Menzies Lyth, 1988). Cooper and Burrell (1988) suggest that postmodernists believe that people only create ‘organising processes’ and that their minds create the structures involved. Systems Thinkers, take a much broader, holistic view; examining, not just the internal components and processes but the relationships between them and the environment. Drucker (1998), for instance, broadens the definition by introducing an ‘entity outside that of the group’ - the “community”.

In essence, the wish to examine the processes in Social Identity Theory ties the study, in part, to a constructivist viewpoint on which the theory is based; however, the use of the Viable Systems Model enables this viewpoint to be broadened to include structuralism and postmodernism. Chapter 3 will establish the philosophical approach taken by the research; while the literature review at Chapter 2 will cover the extensive investigation by the research to identify if previous work could impart meaning to the study or impact on the research’s uniqueness or scholarship to ensure that the study fills a ‘gap in knowledge’.

1.4 Social Identity Theory

Tajfel and Turner (1979) started to develop Social Identity Theory as a concept of group membership; suggesting that the main reason people form and join groups is to enhance their self-esteem. Turner (1981) later developed Self-Categorization Theory to explain how people identify and classify groups and how they use the stereotypes, they have created to self-categorize themselves.

Once people have categorized with a group, Social Identity Theory suggests that they seek to enhance the group’s image and hence their own self-esteem by making their in-group positively distinct from any rival or comparable out-groups (Turner, 1982). They also start to develop a sense of ‘us’ and depersonalise their own personal identity in favour of the group identity; acting as a ‘representative’ of the group, adopting the traits, behaviour and values of the group prototype (Hogg and McGarty, 1990). Individuals will undertake identity enhancing behaviours in an effort to make their group more favourably distinct, by allocating desirable
qualities to their *in-group* ‘us’, through *in-group* favouritism, and undesirable qualities on *out-groups* ‘them’ through *out-group* derogation (McGregor, Reeshma, and So-Jin, 2008).

People do not only align with a single group, they maintain multiple identities as they move through their social environments, although, under the principle of *functional antagonism* (Turner, et al 1987; Turner and Onorato, 1999) only one identity will be *salient* at any one time. This will depend on cues in the environment that trigger the most relevant identity for the individual to maintain *cohesion* with their *beliefs*. The particular social identity that people consciously or sub-consciously adopt will be heavily dependent on social context, for instance; if there is a strong threat from a significant *out-group*, then the relevant *in-group* *salience* will increase. A rise in *salience* will draw individuals more towards the *group* *prototype* so that they are aligned with *group norms, beliefs* and *values* in order to create *cohesion* and *consensus* within the group (Turner and Onorato, 1999). As individuals align more with the *group image* and *attitudes*, they will also *stereotype* and *depersonalize* members of the *out-groups*.

Social Cognition is a theory of “…*how people think about people*…” (Fiske and Taylor, 1991a, p1) that overlaps some of Social Identity’s purview. Social Identity and Social Cognition have evolved in parallel and provide mainly complimentary viewpoints, although adherents from both disciplines may argue the differences. Some areas of group interaction are covered by one theory and not the other and some are used interchangeably.

While there are theories that rival or overlap Social Identity Theory’s subject matter, Social Identity Theory nevertheless provides an *empirically researched* model that explains some aspect of human behaviour in groups. Flood and Jackson (1991), however, report a number of weaknesses in taking a purely ‘human relations’ approach to examining groups or organisations. They suggest that looking at social groups only from a ‘human relations’ perspective does not allow for *collective goals* and *objectives*, or a connection with the environment,

“…which may drive the purpose of the organization and shape the human goals or behaviour with a higher priority than their own, to ensure the group’s survival” (Flood and Jackson, 1991)

Combining Social Identity Theory with the VSM brings the ‘human relations’ approach together with a *holistic* construct that identifies both *intrinsic* and *extrinsic* motivations and provides mechanisms that connect the system to the environment. Additionally, purely ‘human relations’ approaches, particularly those based on *constructivist* or *symbolic interactionism* (Bulmer, 1969) that explain the *dynamic nature* of human identity, do not provide an answer as to how *enduring* group identities arise or how they are maintained. The Viable System Model, by its very construct and its basis in Systems Theory, provides the conceptual basis that can explain these phenomena
1.5 The Viable Systems Model

The Viable Systems Model developed by Beer (1972, 1975) provides a holistic, recursive model of an ‘open system’, based on Ashby’s (1958) Law of Requisite Variety that can align autonomous sub-systems to provide a single purposeful, viable system who’s processes exhibit ‘closure’ from perturbations in the environment that enable it to maintain its identity. The VSM provides a model of how systems endure, or more accurately, how their identity endures:

“A viable system is one sustaining the capability for independent existence as a recognizable identity. (Beer, 1983b p807)

Beer recognised that the principle outputs or transformations of a viable system must each operate as autonomously as possible with a separate purpose and identity; connected to the environment by homeostatic processes that both amplify and attenuate environmental complexity in order to undertake the system transformations.

In order to maintain its identity Beer understood that a viable system must have a meta-system that was self-referential through recursivity within its own structure, so that it could represent a complex ‘system of systems’ linked through homeostats to maintain itself in balance with the variety of the environment. The management of these systems had to achieve cohesion, through their regulation and coherence, through the synergy of their emergent properties. The system as a whole had to achieve a balance of vertical (cohesion) and horizontal (operational) variety to maintain Ashby’s Law. Additional to these processes, Beer identified the need for the system to be able to audit itself and to send an algedonic signal to interrupt normal operations if the system was threatened. The system had to be adaptive to change both routinely and through forethought and finally, be able to protect its identity through the ‘closure’ of these sub-systems and their processes from the environment.

1.6 The Suitability of the Viable Systems Model for Social Research

If the Viable Systems Model and cybernetics are to be used as a framework for the study of the viability of social groups a major concern is the criticism levelled against systems theory in general and cybernetics and the VSM in particular that they lack the ability to model human behaviour. Jackson (1988) suggests that the VSM is unable to represent the ‘social dynamics’ necessary for a complete view of ‘organisation’ as identified by Habermas (1972, 1974 and 1979). This is certainly a viewpoint that has had widespread agreement. Mintzberg’s ‘Ten Schools of Thought about Strategy Formation’ (Mintzberg et al 1998); for instance, suggests that a cybernetic approach “neglects power, politics, culture and social elements”, and from (Boudreau et al, 2003) system models of human behaviour are often ‘over simplistic’ with “people [that] have predictable behaviour’. The harshest criticism of the
VSM’s ability to represent social dynamics, however, comes from Ulrich (1981, 1983) who argues that the VSM fails to represent human intrinsic motivations. Without a construct that can represent human emotions, intrinsic motivations and behaviour examining the formation of social groups within the framework of social identity would be unfeasible. To overcome the criticism that the VSM lacks this ability the research has to demonstrate that the VSM is capable of semantic, pragmatic and syntactic reason which are the basis of human affective understanding (Brier 1996). The literature review covers this argument in full to show that the VSM can indeed demonstrate these factors. If, however, the research is to be used practically to ‘solve’ complex-pluralist or ‘messy’ problems created by the “intrinsic motivations that occur in social systems” then a methodology would need to be developed from the study to resolve the rivalries and conflicts of groups. While this is a very desirable achievement it is beyond the current scope of the study and is a subject for future research.

1.7 Research Approach and Design Strategy

Research on complex systems is complex. During the latter part of the 20th century several eminent academics started to suggest that there were few, if any, ‘scientific methods’ available for the study of social systems. Elster (1983) suggested that while causality and ‘traditional science’ worked well for the natural sciences, areas like biology needed ‘functional explanations’ but the social sciences could only be researched by the use of ‘intentionality’. Hayek (1989) was, similarly concerned that social and management theories were created from reasoning that ‘excluded human intentionality’.

The central failing of science in its use for analysing complex systems is its reductionist and determinist approach and its method of structural representation originating from Descartes (1637, 1641,1960). Cilliers (1998) who adopts a postmodernist approach takes the view that complex systems are constructed of multiple elements connected by ‘multifaceted non-linear relationships’ He maintains that reductionist philosophies cannot be applied to complex systems because complex systems cannot be reduced in complexity, “otherwise they would merely be complicated”. Schwarz (1994) suggests that to deal with these phenomena requires an;

“…extension of science with not only new tools but the need to question the usual epistemological and ontological presuppositions.” (Schwarz, 1994)

Several ‘new tools’ have been developed to study complex systems. Stafford Beer (1981, p52) suggests that an “algorithm can be used to find a heuristic”, in other words the need to abandon rule based models and use general solutions to find general goals. In Complex Adaptive Systems “Agent Based Modelling” (Holland and Miller, 1991) is used to give an
indication of the answer from computer simulations. Cilliers (1998, p70) who, having defined complex systems as distributed systems that cannot easily be represented by rule based methods suggests that the only viable way is to construct neural networks, in other words to replicate the complex system itself. Alternative methodologies that have been developed in systems research to deal with complex social problems such as Soft Systems Methodology (Checkland, 1981) and Critical Systems Heuristics (Ulrich, 2005), take very different philosophical standpoints in order to be able to solve the problems they address. This research, however, adopts a solution, also suggested by Cilliers (1998, p80), of taking a ‘snapshot of the system’. This viewpoint parallels the concept introduced by Beer for examining a complex system with the Viable Systems Model of bringing part of the “system into focus” (Beer, 1985, p6).

The concept of taking a ‘snapshot’ of a complex dynamic system by using traditional quantitative and qualitative methodologies to measure the values of its components will allow the study to fall within the scope of the research. The components of a system are defined by Varela (1979) as the elements of “a network of processes of production”. Taking a ‘snapshot’ can be likened to an electronic engineer using a signal tester or oscilloscope to measure points in a highly complex electronic circuit; except the methodology will measure the value of a social identity process. Like the engineer we know from the theory what values we are expecting, however, when they are not observed, working out what is happening becomes a challenge.

Having a ‘snapshot’ of the values of the components of a complex dynamic system still requires an understanding of what is happening between the components. To address this requirement it is proposed to examine the value of key processes made up of the relationships between the components and to utilise a process of inductive, deductive and abductive reasoning - to analyse and synthesis the components and key processes into a more complete representation of the system. Barton and Haslett (2007) describe the process of inductive, deductive and abductive reasoning that can be used to explain the scientific method using Peirce’s (1931-35) theory on abduction; combined with analysis and synthesis.

The Viable System Model is ideal for investigations and diagnostics of this kind. It is described by Golinelli et al (2010) as grounded theory, by Yolles (2006) as its own epistemology and by a Harnden (1989) as a interpretist “hermeneutic enabler”. However, because the area has not been studied before it is considered desirable to conduct research that provides an overview and broad focus of the subject matter being investigated, this essentially makes the research an exploratory study that should enable it to answer the research question but should also highlight, and provide insight, into those areas that require further explanation.
1.8 Research Aim

The research aim is to develop a Viable System Model of groups with salient social identities in order to assess their viability and to validate the model by studying groups in different environments; such as business organisations, religious orders, societies, charities and institutions. The research will not specifically investigate the effect of these environments on the groups, but use the different situations to ‘tease’ out any underlying invariant components (congruent, cohesive, coherent and consistent social processes, factors, structures or relationships) that might give insight as to whether salient social groups can become viable and clarify how their viability can be assessed and measured.

Within Social Identity Theory the salience of a group’s identity has a significant impact on the attitude and beliefs of the individuals of the group. At high levels of salience the individuals of the group de-individuate and align with the group prototypicality as ‘one’. With this process a social group is formed.

For the purposes of the research a group’s social identity is considered to differ from its organisational identity as the former is defined by the group’s intrinsic purpose while the latter is defined by its explicit purpose. In Social Identity Theory a group’s intrinsic purpose is to transform the individuals into a single identity in a manner that enhances their self-esteem. This is achieved by undertaking specific social activities which can be disassociated from the group’s explicit activities which are the transformations achieved by its organisational purpose.

The purpose of this research is not to examine what a group does but to examine how it becomes a social group, understanding the psychological activities and relationships that are developed alongside the creation of social value, prestige, prototypicality and purposefulness.

The difference between the explicit and implicit purposes can be demonstrated by examining some social groups that exist solely to achieve group formation and identity with no apparent or vague explicit purposes – such as social clubs that may carry out very diverse tasks but their implicit aim is the formation of a group. We are so used to seeing the explicit purpose and structure of an organisation that it is difficult sometimes to see its implicit functions i.e. the people and not the roles or the structure. One way of clarifying this is to imagine the organisation as the ‘environment’ for the group, although, this is a somewhat simplistic explanation because, in some cases, the implicit and explicit purposes may be closely aligned. An alternative perspective, more in line with VSM theory is to consider that the research aims to bring the social groups of an organisation into focus while fading the organisational structure into the background.
1.9 Research Question

The principle research question is;

*Are social groups with salient identities viable systems.*

1.10 Research Objectives

- To identify a research paradigm and approach necessary to address the research question.
- To create an influence map of the *psychological activities* of social group behaviour from Social Identity Theory.
- To utilize the systems map of social identity psychological activities to develop a Viable Systems Model of social groups with salient identities.
- To develop a research design, consistent with the research philosophy, approach and strategy, to examine the research question.
- To conduct research and assess the validity of the model to identify viable groups with salient social identities.
- To identify if any groups with salient social identities can be assessed by the model as viable systems and if possible to assess which factors affect the development of viability in groups with salient social identities.

1.11 Significance of the Research

The research has several possibly significant results. Firstly it brings *human behaviour* into cybernetics; an area where there has been considerable criticism in the past (Checkland, 1980). A cybernetic model of the behaviour of group formation brings the powerful mechanisms in cybernetics to bear on new subject areas such as *psychology and sociology*. Significant theories from system thinking have already made inroads into these areas; Luhmann’s (1995) Social Systems Theory for instance; however, these theories have often been criticised for the total lack of *human agency* (Habermas cited in Bausch, 1997). This work is only possible now because *psychologist* have essential ‘mapped the state-space’ of individual and group cognition, opening the door to cybernetic principles.

Both disciplines stand to benefit from this work. While cybernetics lacks a useful model of human agency, Social Identity Theory lacks mechanisms to explain *coherent* purposeful action, goal setting and *enduring social identities*. The Viable Systems Model with its powerful diagnostic tools (Jackson 1989, p 562) such as; *recursivity, autonomy, cohesion* and *requisite variety* can be applied to these new areas.
By comparing the processes in the Viable Systems Model with the comparable processes in the new disciplines, or the lack of comparable processes, new insights are developed; for instance, the research identified the possibility that ‘gossip’ was the social group algedonic channel and the mechanism for adaptation of group norms appears to follow closely the processes of adaptation used by Stafford Beer.

While only one level of recursion is reported in the research three levels were investigated. The two lower levels were the social individual and the social brain. Both these levels of recursion were mapped onto different theories in psychology; the first to Social Cognition and the second to neurological processes. In both cases the Viable Systems Model developed was able to identify the cohesion necessary between two separate psychological theories, providing a mechanism to bring two, hitherto separate, theories together. For instance, it identified that the self-motives - namely self-enhancement, self-verification, self-assessment and self-improvement (Sedikides and Strube, 1997), were recursively mirrored, on a group level, to the processes in Social Identity Theory of in-group-favouritism and out group-derogation?

At a practical level it is also hoped that by developing the model greater understanding of group behaviour can be achieved and that this will lead to better mechanisms for resolving conflict within organisations and managing change programmes.

1.12 Study Direction - A History of the Research

The Research Question in essence never changed throughout the period of study because it was derived from a personal desire to answer the question about whether groups with salient social identities achieve viability. Without the focus of the research question the complexity of this research could have taken it in many different directions. Robson (2011) indicates that the centrality of the research question is vital to research design.

One problem that did arise with reference to the research question, was recognising that the question “are salient social identities viable systems?” would itself raise questions about the validity of Social Identity Theory as a viable theory. On reflection this was considered necessary. If a model of salient social group behaviour was to be valid then the model and its underlying foundations, both VSM and Social Identity Theory had to be valid too.

There were several significant factors that made the research a considerable challenge. Firstly it spanned two or more different disciplines; systems thinking and psychology. Each of these areas had their own expertise, language and culture, each difficult to penetrate with a different discipline. Several other disciplines also encroached on the work; philosophy, sociology, anthropology and business studies and this raised the second issue, namely, that of ensuring that the work had not been covered before in another area. Systems thinking penetrated many different disciplines during its heydays of the 1960’s and 1970’s. Katz and
Kahn (1966), for instance; brought system thinking concepts into psychology in the 1960s while Luhmann’s (1995) Social Systems Theory, also in the 1960s, brought the concepts of autopoiesis and closure to sociology. There was, therefore, a considerable amount of research to investigate. To resolve this Robson’s advice was followed to use a ‘conceptual framework’ by creating a concept map in;

“...graphical or in narrative form, [of] the main things to be studied – the key factors, constructs or variables – and the presumed relationships among them - Frameworks can be rudimentary or elaborate, theory-driven or commonsensical, descriptive or causal.” (Robson, 2011, Kindle 2469).

The conceptual framework was developed as a ‘concept and argument’ map, see Figure 1.1 (included as an attachment). This approach helped to map the ‘state-space’ of the subject area, and to develop the relationships between components, clarify the relevant research material and provided a logical argument for and against the research question.

The last area of complexity, already discussed, was how to conduct research on complex systems. This question is still largely unresolved as the debate is on-going. The solution adopted was practical and pragmatic but there should be no doubt that it leaves a lot to be desired. Taking a ‘snapshot’ of a complex system and drawing conclusions from this brief picture is not ideal, given a greater research scope it would have been preferable to take a series of ‘snapshots’ as part of a longitudinal case study, however, recognising the limitations of the research method are important. From the viewpoint of a complex system, probably best explained by Cilliers (1998) from a connectionist and postmodernist standpoint, the contradictions in many of the well-known processes become apparent. The simple answer is that there is no easy way to conduct research on complex systems and this should be understood from the beginning.

While the research is presented here as a linear narrative it was not conducted in this manner. Stafford Beer suggests that any Viable Systems Model should represent three levels of recursion. To achieve this the original model represented three levels, starting with; neurological processes, then social individuals (social cognition) and finally salient social group (social identity). It became apparent, however, that research into this larger model was beyond the scope of the study and the model was reduced to two levels of recursion using only social identity and some aspects of social cognition.
1.13 Guide to the Thesis

1.13.1 Chapter 1 - Introduction

Chapter 1 covers the introduction to the subject of the research. It explains the reasons for the research and introduces Social Identity Theory and the Viable Systems Model. The chapter then discusses the issues around the suitability of the Viable Systems Model for undertaking social research and follows this with a summary of the research approach, design, research aim and objectives. The chapter concludes with a discussion of the significance of the research, summary of chapters and guide to the history of the study direction.

1.13.2 Chapter 2 – Literature Review

Chapter 2 provides a literature review of the subject matter. It examines the concepts of Social Identity Theory and then conducts a comparison with its companion theory, Social Cognition, before covering the latest research. After a brief summary of other areas of psychology that are relevant, the chapter introduces Systems Theory and the Viable Systems Model. It explains its concepts and examines the arguments for and against using it as a model of human behaviour. This discussion leads to the latest developments in the VSM that could resolve some of its issues.

1.13.3 Chapter 3 – Research Paradigm and Approach

Chapter 3 covers the philosophy, approach and design of the research. It starts by identifying the research questions and then develops the research paradigm from the ontologies and epistemologies of the constituent theories, demonstrating the constructivist foundations of Social Identity Theory and the structuralist foundations of the VSM and hence the need for a pragmatic approach. The chapter then moves on to discuss the research implications of using analysis in complex systems and qualifies the approach to include synthesis and abduction in a mixed-strategy design.

1.13.4 Chapter 4 – Research Model

Chapter 4 uses the information provided in the literature review to build a Viable Systems Model of salient social identities. It explains how it will represent the elements of Social Identity Theory as components of the Viable Systems Model and the relationships between them as key processes.

1.13.5 Chapter 5 – Research Methodology

Chapter 5 identifies how the Viable Systems Model of salient social identities developed in Chapter 4 is implemented as a research project. It identifies the variables for measurement,
linking the data to the propositions, the questionnaire and the *semi-structured* interviews, the conduct of research and questions of validity and reliability and ethical issues.

1.13.6 Chapter 6 – Research Results
Chapter 6 provides the research results for the highest level of recursion only; that is the conclusion of the synthesis (results for the lower levels are provided in Appendix 3). The chapter provides a summary of the criteria used for interpreting the findings and examines the reliability and validity of the data.

1.13.7 Chapter 7 – Synthesis of Components
Chapter 7 synthesises all the components by group-type along with the qualitative data into a narrative describing the key factors of each group-type. The chapter completes with an analysis of the invariances of all the group-types.

1.13.8 Chapter 8 – Research Summary
Chapter 8 examines the research process and results. It inspects the invariances of the invariances, in other words those aspect common across all group-types and all group-ids. It confirms the validity of the model but concludes that there is no easy measure of *viability* except the process itself. The chapter then summarises the research findings indicating the factors that influence the *viability* of social groups. The individual *components* used in the research are re-evaluated and the Viable Systems Model restructured to account for the lessons identified. Finally the research process itself is examined and assessments of the design and methodology are provided.

1.13.9 Chapter 9 - Conclusion
Chapter 9, the final chapter revisits the research question to assess the success of the study and makes recommendations for future research in light of the experience and knowledge gained, detailing the significance of the findings, and their possible future application.

1.14 Summary of Chapter
This chapter introduced the subject of the research. It explained the reasoning behind the research as a personal question and introduced the main theories that will be called on, namely Social Identity Theory and the Viable Systems Model. The issues surrounding the suitability of the Viable Systems Model for undertaking social research was than discussed, followed by a statement of the research approach, design, research aim and objectives. The chapter concluded with a discussion of the significance of the research, summary of chapters and history of the study direction.
“It’s me against my brother, it’s me and my brother against our cousins, it’s me, my brother and our cousins against the town, the town against the tribe and the tribe against the world.” - Arab proverb

2.1 Aim of Chapter

The aim of this chapter is to provide a review of the latest research in the areas of Social Identity Theory, Social Cognition and the Viable Systems Model, while at the same time building the underpinning knowledge required for the research. It concludes by providing an argument for the use of the Viable Systems Model as a means of representing human behaviour in viable group formation.

2.2 Social Identity Theory

2.2.1 How people relate to groups - self-categorization and depersonalisation

Social Identity Theory (Tajfel and Turner, 1979; Abrams and Hogg 1988) is a theory of group membership and behaviour that Tajfel and Turner suggest is driven by a need to enhance self-esteem and as a result provides the mechanism for the cohesion of groups.

Tajfel and Turner recognised that a ‘social identity’ provides a summation of all the effects of social cognition (Fiske and Taylor, 1991a) that describes to both oneself, and others, “this is who I am as a result of all these things that I believe and do”. It signals the accumulation of our beliefs about ourselves and in doing so provides the mechanism for stereotyping ourselves and others as a first stage in group categorization.

The significant breakthrough for Turner in the development of Self-Categorization Theory (Turner 1981, Turner and Onorato, 1999), a companion theory to Social Identity, was the realization that in categorizing others our capacity for self-reflection means we categorize ourselves. Hence, the process of joining and being accepted by a group becomes more than just a gathering of individuals; the process of self-categorization means that when people elect to join a group they have self-selected that group because its attributes are aligned with their own; as have the others. This means that groups are self-selected in alignment with their members personal identity; they are part of it and it is part of them;

“…the individual’s knowledge that he belongs to certain social groups together with some emotional and value significance to him of this group membership” (Tajfel, 1972 p292)
Part of peoples' sense of identity comes, therefore, from their group memberships;

“…as much as personal identity gives people a sense of "self", so social identity is part of a person’s sense of "who they are" created through the meaning, values and beliefs of being a member of a group”. (Hogg and Terry, 2000)

The very process of self-categorization, of aligning with a group, causes an individual to depersonalise themselves, from ‘me’ they become ‘we’ and from ‘I’ they become ‘us’;

... the critical contribution of self-categorization and social identity theory to the study of group processes is that they link social categorization to self-conception and psychological group membership. The core idea is that we categorize ourselves just as we categorize others, and thus we depersonalize ourselves (Hogg and Tindale, 2001, p61)

2.2.2 Prototypicality and Salience

The multiple individual self-categorisations of a group, by its members, will not all be perfectly aligned. To create group coherence individuals will have to adjust their view of the group and if necessary their values and beliefs. People monitoring and socializing values with other members of the group achieve alignment or cohesion between the individuals in the group. Through the use of schema (Piaget 1952,1973 and Anderson, 1977) the members build a stereotype of a typical group member with a prototypical image of the group identity which they then strive to attain (Hogg and McGarty, 1990). The prototypical image of a group member will be a summary of the group attributes; image, traits, attitudes, behaviours and values.

The salience of social identity varies depending on environmental conditions. It increases with similarities within the group and differences between groups. It is increased by social context; such as when there is a threat from out-groups. As the salience increases so people stereotype themselves more towards the group prototype and alter their personal behaviour to adopt group norms and values, to achieve group cohesion (Turner and Onorato, 1999).

“...self-categorization has additional effects; it not only transforms self-conception and generates a feeling of belonging and group identification, but also transforms how we actually feel and behave to conform to the group prototype. Self-categorization causes our thoughts, feelings, perceptions, and behaviour to
conform to our prototype of the in-group". (Hogg and Reid, 2006, p11).

The key attributes that define a group’s prototypicality will differ depending on the context of the group and even the relative context. Some attributes will define the group better in some context than others and so too some members of the group, in some contexts, will represent the group prototype better than others.

“…[prototypes] are fuzzy sets, not checklists, of attributes (e.g., attitudes and behaviours) that define one group and distinguish it from other groups. These category representations capture similarities among people within the same group and differences between groups. In other words, they accentuate intragroup similarities (assimilation) and intergroup differences (contrast) (cf. Tajfel, 1959) and thus transform a bewilderingly diverse social stimulus domain into a smaller set of distinct and clearly circumscribed categories. Group prototypes submerge variability and diversity in a single representation that characterizes an entire human group. Technically, prototypes obey the meta-contrast principle - they maximize the ratio of intergroup differences to intragroup differences. By so doing, they also enhance perceived entitativity - the property of a group that makes it appear to be a coherent and distinct entity that is homogeneous and well structured, has clear boundaries, and whose members share a common fate” (Hogg and Reid, 2007, p10).

Precisely because prototypes define the group and attenuate the complexity of group membership they also characterise the group normative behaviours.

“From a social identity perspective, group prototypes describe individual cognitive representations of group norms. And, importantly, the process of depersonalization based on self-categorization, described above, produces conformity to shared in-group prototypes and thus produces in-group normative behaviour.” (Hogg and Reid 2007, p11).

2.2.3 Positive Distinctiveness and Group Enhancement

Turner (1981) states that once people have self-categorized with a group, they will seek to achieve improved self-esteem by enhancing the attributes of the group in the dimensions
that are of value to them. To do this they need to reassure themselves that their group is positively distinct from other ‘comparable groups’ in these important dimensions and values.

“This quest for positive distinctiveness means that when peoples sense of who they are is defined in terms of "we" rather than "I" they want to see "us" as different to and better than "them" in order to feel good about who and what they are.” (Haslam, 2004, p21).

The need to differentiate from other groups and the need to enhance this difference drives members to develop group enhancing behaviours (Turner, 1982). They seek to favour their in-group and its members and derogate out-groups and out-group members along the dimensions that are important to them. As people stereotype and depersonalize themselves as a member of the in-group as ‘us’ they will simultaneously stereotype and depersonalize members of out-groups as ‘them’. Individuals ascribe good and desirable qualities to their group and bad and undesirable qualities to the out-groups.

As members of a group try to enhance its status. Hogg and Terry (2000) argue that ‘uncertainty reduction’ is just as important as self-esteem as a motivating factor for group behaviour;

“In addition to being motivated by self-enhancement, social identity processes are also motivated by a need to reduce subjective uncertainty about one's perceptions, attitudes, feelings, and behaviours and, ultimately, one's self-concept and place within the social world. Uncertainty reduction, particularly about subjectively important matters that are generally self-conceptually relevant, is a core human motivation. Certainty renders existence meaningful and confers confidence in how to behave and what to expect from the physical and social environment within which one finds oneself. Self-categorization reduces uncertainty by transforming self-conception and assimilating self to a prototype that describes and prescribes perceptions, attitudes, feelings, and behaviours.” (Hogg and Terry, 2000, p6)

Joining a high status group, therefore, seems to provide a sense of security but also improves self-understanding, as Hogg and Terry state above, certainty renders ‘existence meaningful’ as people search for ‘coherence’;

“…in order to understand the direction that the search for coherence will take” (Tajfel, 1969, p92)
Together the motives of self-esteem and uncertainty reduction provide a scale of motivation on a continuum from “survive to thrive”.

2.2.4 Meta-Contrast and Perceiver Readiness

The process of self-categorization can take one of two specific forms that relate to how well an individual believes they ‘fit’ a group (Turner, Hogg and Oakes 1987). An individual’s alignment with a group can be comparative or normative or both. Comparative fit employs the principle of meta-contrast; which relates the ‘ratio of similarity’, between an individual and the available groups or individuals in the current relevant social context, while normative fit uses the principle of ‘perceiver readiness’, which is an alignment of values, beliefs and attitudes.

With the principle of meta-contrast individuals compare the ‘contrast of contrasts’ between inter-class and intra-class differences, in other words they define who they see as an out-group and who they see as an in-group by amplifying the relative differences and distinctions that they see around them. This can have the effect of changing the same groups from out-group to in-group, and vice versa, at different levels of abstraction; for example; if a biologist is surrounded by other biologist and some physicists the two groups will accentuate the differences between themselves and the biologist will form an in-group with the other biologists and be very much a biologist, displaying as much of the prototypicality of a biologist as possible. The physicists will do likewise. However, if the group of biologists and physicists is now surrounded by artists they may well consider that the differences between them are less than the differences between them and the artists and so they self-categorize themselves as ‘scientists’ and create an in-group with the artists now as the out-group.

These identities, at any level of abstraction, are just as real as the person’s personal-identity and go together to create their self-concept;

“Self-categories at all levels of abstraction are seen to be equally real and just as much a reflection of a person’s true self, no one level of self-categorization is inherently more appropriate than another and hence non is in any sense more fundamental to who or what the person is. This is at odds with the tendency for psychological theorizing to give privileged status to personal identity. Believing that a person’s true self is defined by their individuality”. (Haslam, 2004, p31)

The use of comparative fit to compare individuals and groups by intra and inter-group differences is only part of the manner in which self-categorization is utilized. While an individual categorizes others with comparative fit they, nevertheless, examine the nature of
the differences between groups to ensure that they are “consistent with the perceiver’s expectations about the categories” (Haslam 2004 p 34). This process is known as normative fit and is managed by the perceivers readiness to acknowledge the normative attributes of a group. In other words the individual has to know what the expected behaviour, attitudes or norms of the group are beforehand to be able to judge the nature of the differences.

“… the prototype is therefore normative in the sense that it captures the meaning of inter-category differences for a specific social comparison; in so doing, it provides a basis for self-definition and behavior. We have a priori normative expectations; nonetheless, the important point is that the norms always reflect the salient identity.” (Reid and Hogg 2005, p132)

There are two important points for the research that relate to the self-categorization process. Firstly, because the perception of prototype and category varies between individual and group and is changed by context and relativity there are no predetermined categories or ‘universal’ identities. (Haslam, 2004, p35). Secondly, people will be more ready (i.e. have a greater perceive readiness) to self-categorize with groups that they feel will provide them with an “enduring sense of self” because they provide a “valued and self-involving opportunity for membership” (Haslam, 2004, p36).

2.2.5 Multiple Identities and Functional Antagonism

Social Identity Theory recognises that people will maintain multiple identities in order to function within the myriad of groups that make their social world. However, only one identity will tend to be salient at any one time, this includes their personal identity. The increase in salience of one identity will cause the automatic decrease in salience of others. This is known as the principle of functional antagonism (Turner et al 1987; Turner and Onorato, 1999). Situations that bring out attributes, attitudes or goals that an individual sees as fundamentally part of self will make their personal identity become salient. If a group identity has greater salience than a personal identity then the personal identity will diminish. In some cases individuals will internalise the group values even if they conflict with their own and in extreme cases they will adopt the group identity as their own and develop a ‘fused’ identity (Ashforth and Mael, 1989, Terry, Hogg and Duck, 1999).

2.2.6 Low Status Groups

People who are part of a low status group need to restore their self-esteem. To do this they may engage one of several different strategies. Firstly, if the situation allows, they may try to join the higher status group; this is known as social mobility. If this fails or is not allowed by
the high status group then they may either engage in social conflict or social creativity (Haslam 2004, p25).

If the high status group is perceived as legitimate the low status groups may engage in social creativity by re-categorising themselves by a new dimension or attribute that they know they do well; such as “they are rich but we are kind”. However, if the low status group does not see the higher group as legitimate then they may engage in social conflict; particularly, if they feel threatened (Haslam, 2004, p27). High status groups may show magnanimity or favouritism in irrelevant dimensions to low status groups to appease them.

Hogg and Abrams (1990) suggest that self-esteem is not the only mediator of the ‘social value’ assigned to group membership; they propose that uncertainty reduction and optimal distinctiveness (Brewer 1991, 1993) also play a part. Optimal Distinctiveness Theory suggests that there is a balance between group identity and personal identity that people strive to achieve. Other areas that have been found to influence group behaviour, particularly of low status groups are; network activity, entitativity (Hamilton and Sherman, 1996) and anonymity (Lea and Spears, 1991).

Anonymity has a complicated effect of low status group membership which is represented with the Social Identity Model of De-individuation Effects (SIDE) (Lea and Spears 1991, Postmes et al 1998). SIDE is based on a premise published by Ng (1980, 1982) that;

“"The cognitive salience of group identity is not a sufficient condition for normative behaviour to occur". It is also necessary for group members to have the power to express group norms even in the face of out-group resistance.” (Ng, 1980, 1982, cited in Reichet et al, 1998, p17)

With cognitive effects SIDE states that anonymity of low-status group members to out-groups will increase the depersonalisation effects, precisely because they are anonymous, and hence it will increase group identity salience; provided, that is there is a clearly defined in-group in the first place. However, when low-status group members are visible to high status out-group members, who hold some power of sanction, the salience of the low-status in-group will reduce. Therefore, except for some special occasions, anonymity will also enhance the low-status group norms as low-status group members are free to act without fear of sanction. In this scenario SIDE demonstrates many of the de-individuation effects proposed by Zimbado (1969).

2.3 Social Cognition - How People Think About People

Social Cognition and Social Identity form two overlapping theories of an individual’s behaviour towards their social environment. The theories are overlapping because they
cover some of the same human behaviours, however, they do this from very different perspectives. Fiske and Taylor (1991a) defined *social cognition* as;

“How ordinary people think about people and how they think they think about people” (Fiske and Taylor, 1991a, p1)

Social Cognition studies an individual’s understanding of, and interaction with, other people. It therefore covers a broad spectrum of human behaviour. It provides theories about the ‘concept of self’ including *self-identity* and the *self-motives*, specifically; *self-enhancement, self-verification, self-assessment and self-improvement*, (Sedikides C, Gregg A , 2008). It advances theories on personal cognitive behaviour such as *cognitive dissonance* (Festinger, 1957), and on how individuals formulate and carry out *intentions* (The Theory of Planned Behaviour, Ajzen,1991). From the *self-concept* Social Cognition moves outwards to examine how individuals assess other peoples traits and behaviour (causal attribution, Kelley, 1973), how they create *stereotypes* (Allport, 1954), and how they categorize groups and social behaviour. Social Cognition posits that these cognitive processes derive from people’s goals and intentions and are closely associated with their situation and environment (Fiske, 1993).


2.3.1 Causal Inference - Individuals

Heider (1958) demonstrated that people are continuously making *causal inferences* on the behaviour of other individuals around them. He showed that people try to determine whether or not any action is intentional; and hence *attribute traits* to the person they are observing. Uleman et al,(1992) showed that this examination of the environment is spontaneous i.e. it is it is carried out automatically. The degree to which it is automatic depends on the perceived ‘prototypicality’ of the person (Cantor and Mischel, 1979). In Social Cognition *prototypicality* is a ‘graded categorization process’ (Rosch, 1983) whereby items are associated with an ideal; for instance, a robin is seen as more typical of a ‘bird’ than a penguin. Memory is biased in a *prototype* manner (Stangor and Mcmillan 1992), which means that inferences of high *prototypicality* are recalled more easily but also, because *heuristic* process are used to *categorise* them, they cause more *cognitive* errors.
When recognising whether or not behaviour is intentional, Malle (1999) suggested that people look for evidence of a reason for the action. He maintains that reasons are derived from a ‘desire’ and a ‘belief’ that the action leads to that result. He goes on to demonstrate that behaviour is attributed to four modes:

“People’s conceptual toolbox for explaining behavior thus contains four modes of explanation: one for unintentional behavior (causes), and three for intentional behavior (reasons, causal histories, enabling factors).” (Male, 2007, p11)

Recognising reasons why people do something is often derived from a culture’s shared knowledge (Bruner, 1990). Understanding beliefs, however, is much harder to prescribe and requires specific information from the circumstances.

2.3.2 Inferences About Groups

The Social Cognitive perspective maintains that generally people make memory based judgements about groups and group membership as opposed to ‘spontaneous’ judgements for individuals (Susskind et al 1999). However, this depends on the ‘entitativity’ of the group (McConnell et al 1997); that is, the degree to which a group can be seen as a cohesive and purposeful collective. High entitativity groups are treated to the same spontaneous processing as individuals; possibly because they are more easily recognizable and hence stereotyped, but also, because they might pose more of a threat or opportunity as their cohesive action can be far more powerful than that of any individual; entitativity defines the ‘potency’ of a group, for good or bad (Sherman et al 1999).

When entitativity is low people process groups and individuals differently by trying to resolve inconsistencies for individuals but not for groups (Welbourne, 1999); however, when entitativity is high they attempt inconsistency resolution for both. Entitativity, therefore, increases the salience and importance of groups so that inferences drawn about them are treated in the same way as individuals; through simultaneous online processing. Lickel et al (2000) and Sherman et al (2002) showed that there are three main group typologies that are spontaneously classified; intimacy groups, task oriented groups and social groups.

Sherman et al (1999) suggest that there are many parallels between entitativity and the three key-processes in Social Identity Theory; namely, social identity, self-categorization and optimal distinctiveness and that these factors work together with entitativity to enable individuals to assess the salience and ‘social value’ of groups that they are associated with;

“…entitativity has tended to focus on understanding the formation of group stereotypes, typically without reference to the perceiver’s own group memberships. On the other hand, social identity
research has been primarily concerned with the differentiation between in-groups and out-groups and its various ramifications. Despite their differing historical roots and their different points of emphasis, both of these concepts have important relevance for our understanding of social perception, impressions of groups, interaction both within and between groups, feelings about the self and social information processing". (Sherman et al, 1999, p80)

2.3.3 Schema and Stereotypes

So how does the mind make a spontaneous inference of an individual or a group? When is it a conscious thought and when is it automatic? Part of the answer to this lies in the manner in which the human cognitive processes make sense of the complexity they are faced with.

The Gestalt psychologists (Wertheimer, 1912) in examining human conscious processes suggested that the “properties of a whole experience cannot be inferred from its parts” and proposed that conscious thought was a dynamic process rather than a straightforward recall of memories. In subsequent research Wulf (1922) recognised that memory was part of a ‘schemata’ that became more ‘dominant’ as memories were formed and ‘normalized’ the recall process.

Bartlett (1932) used the term ‘schema’ to refer to “an active organisation of past reactions, or past experience” and noted that people did not observe ‘detail by detail’ but took an overall impression and filled in the finer points using a framework built through previous experience; he suggested that memories were reconstructed using schema rather than simply replayed.

From his work on child development and figurative thinking Piaget(1952,1973) proposed that there were three kinds of cognitive ‘schemata’ that organized thought; patterns of behaviour, experiences and objects. Piaget also proposed that ‘intelligence’ could be represented as either ‘operative’ or ‘figurative’, where operative intelligence involves action to transform memory while figurative intelligence is the static representation of objects retained in the mind. Piaget believed that the figurative intelligence was, therefore, subservient to operative intelligence and dependent on it for meaning. Operative intelligence assimilates and accommodates new information. Assimilation is where new information is fitted into existing schema while accommodation is where schema are altered to take account of new information that make no sense under existing structures.

Anderson (1977) demonstrated that schemas are the categorical rules that people use to interpret the world, and just as Piaget suggested; new information is processed with respect to these rules. This provides people with a framework for not only analysing the world around them but also predicting what will happen. This concept of schemas fits exactly the
way that the mind stores information; that is as areas of ‘related significance’ in an associative network of declarative (semantic and episodic), and implicit (procedural) memories (Raaijmakers and Schiffrin, 1981).

Social schemas can work at several levels; at an individual level by applying known traits to a person or at a group level by assigning a person to a certain aggregate i.e. stereotyping.

When a person categorises an individual with traits or stereotypes as a member of a group they not only apply the schema categorical rules to label them but the process will also trigger any pre-formed attitudes about the traits or the group. This will shape the person’s perception of the individual as they adjust their observations to fit the stereotype and allow them to anticipate their actions.

Categorization and stereotyping are mechanisms that enable the human mind to make sense of the world (Allport 1954, Brewer 1988, Fiske and Neuberg 1990, Oakes et al 1994). By applying the learned categorizations automatically it also frees the cognitive mind to process other problems, provided, that is, that the individual acts as expected. During times when a person is more heavily occupied the brain will employ stereotyping to maintain awareness of the environment with minimal effort (Lippmann 1922, Allport 1954). Unusual behaviour, however, will create a re-examination of the individual and an attempt to reassess to take account of the new information (McCrae and Bodenhausen 1988).

As well as the need to free cognitive resources there are several other factors that control the use of stereotypes. Stereotyping can be automatic if; people are unaware of the key stimuli (Devine, 1989), it is goal dependent (MacCrae et al 1997), the social context implies stereotyping (MacCrae et al 1995), recently activated attitudes (Smith et al 1996) or with chronically accessible attitudes (Fazio and Dunton, 1997).

The suggestion that categorization and stereotyping are synonymous is supported by a large body of literature (McCauley and Stitt 1980, Tajfel 1969), this led to a supposition that prejudice was an automatic consequence of this process (Devine, 1989). However, there is some evidence to suggest that the categorization and stereotyping processes can be independent under certain circumstances (Lepore and Brown 1999). This work suggests that stereotypes are ‘functionalist’ tools activated when it is appropriate for them to be used. Locke and Walker (1999) suggest that stereotypes are automatically activated when judgements have to be made about a group but not necessarily when remembering information about the group; hence prejudice is not an automatic reaction to being confronted by a member of the group. They imply that processing goals are the key mechanism that activates stereotyping along the lines of a ‘motivated tactician’ (Fiske and Taylor 1991a). ‘Motivated tactician’ is a process whereby humans use the least resources necessary to process information especially if it they are having to undertake multiple tasks. Similar mechanisms are the Elaboration Likelihood Model (Petty and Cacioppo, 1986) which
controls attitude change using systematic processing and central route processing. The first uses careful evaluation of information to assess the arguments to make substantial attitude change, while heuristic processing used the minimum cognitive effort to assess the presence or absence of ‘persuasion cues’. The Affect Infusion Model (Forgas, 1995) suggest that people use four different modes to process information; direct access, motivated, heuristic, and substantive processing. Direct access and motivated processing use minimum affect infusion (emotions), while heuristic and substantive use ‘shortcuts’ to make a decision by using emotions.

Social Identity Theory leans heavily on the concept put forward by Brewer (1988) that categorisation provides meaning and as a result has not always addressed the issue of automatic stereotyping, neither has it addressed the cognitive mechanisms which connect categorization and stereotyping given a particular social context; Locke and Walker (1999) suggest that processing goals provide this process.

A key question is, therefore, what categories do people make? Attribution research suggests that individual traits tend to be categorised along the lines of personality, in such areas as neurotic, extrovert, introvert. However, with groups the situation is not easily resolved. Some research suggests that group membership tends to focus initially on what is called the “big three” (Levin and Levin 1982); race, gender and age, while other research suggests that people also tend to categorise others in relation to aspects that differ from themselves, shared group memberships, or by deviations from the social norm (Zarate and Smith 1990).

When someone stereotypes another person both direct and indirect influences are generated. Direct influence may activate stereotype beliefs, while the indirect influences may trigger how information is interpreted; people tend to notice information that confirms their stereotype-based beliefs (Bodenhausen, 1988), people tend to interpret ambiguous information to confirm their stereotypes and seek information that confirms the view of others (Snyder and Swann 1978).

Social Identity Theorists argue that categorisation is always constructed from the social context and that the process of categorisation generates intergroup differentiation by measuring the contrast between categories, further it suggests that this process is driven by the need for positive distinctiveness and as a result looks for and creates in-group bias (Tajfel, 1971)

These different approaches are recognised by Vescio et al (1999) who point out that people can be categorized in many different ways along many different dimensions and that in some cases these categorisations will conflict. They suggest that these circumstances can only be interpreted using both Social Cognition and Social Identity perspectives. They argue that different circumstances will result in different valued ‘effects’ being assigned to ‘out-
group' categories depending on the salience and presence of cognitive sub-group representations.

A possible solution to the different approaches of social perception and categorization is provided by the Parallel Constraints Model (Kunda and Thagard 1996). They suggest that perception is a function of the parallel operation of excitatory and inhibitory links in a network. When provided with only category labels a perceiver will activate the associated stereotype and hence its linked traits and behaviours; however, when further information is provided the network seeks to achieve a cohesive output by balancing the linked traits, behaviours and stereotypes. Hence people with multiple categories memberships will activate all stereotypes simultaneously and result in a rationalisation to achieve an overall image. Abrams and Hogg (1999) suggests that this model can be modified to include contrast and context and hence includes self-categorization theory.

2.3.4 Gossip

The last area we have from social cognition is the social cognition understanding of how information is passed in groups. Haugen and Villa (2006, p210) suggest that gossip is an “efficient means of transmitting information about the rules, norms, and guidelines for living in a group or culture”, while Dunbar (2004) suggests that gossip constrains people’s behaviour to both conform to group norms and to contribute to group goals; thus preventing self-serving behaviour and providing a mechanism to construe such group norms and discourage defection.

“…people want to associate their group with generic norms in order to show that it reflects the views of most people and thus deserves to have authority and power.” (Moreland and Levine, 2006, p116)

2.4 Comparison of Social Cognition and Social Identity

Hogg and Tindale (2001) state that the principle difference between Social Identity Theory and Social Cognition is that while Social Identity focuses on ‘social categories, the categorization process and intergroup behaviour, it has paid less attention to processes within groups. Social Cognition, on the other hand, has sought to understand cognition and perception of social behaviour but has not generally focused on large-scale intergroup relations. For this reason the first iteration of the research model, with several lower layers of recursion, experienced problems trying to use just Social Identity Theory as there were few components to suggest how the individual would respond. This provides a powerful reason for aligning the two theories.
Abrams and Hogg (1999) bring together the arguments for and against the integration or differentiation of social cognition and social identity and demonstrate the links that have grown as the two theories have developed in parallel. Operario and Fiske (1999) argue that the two approaches are linked through the;

“…assumptions that people have pragmatic goals in the service of a need to act adaptively and an assumption that individual behaviour can only be understood in the wider cultural context of human existence”. (Operario and Fiske, 1999)

While Oakes et al (1999) maintain that the critical difference between the two perspectives is in the categorization process of groups and in particular; stereotyping. They state that Social Identity maintains that stereotyping is always context dependent while Social Cognition suggests that it is, to some degree, part of a cognitive structure stored in memory.

2.5 Latest Research into Social Identity Theory

Social Identity Theory, being grounded in psychology, has been extensively empirically researched. There are a significant number of diverse areas that have been investigated; such as the use of power, commitment, leadership and politics.

Social identity provides the basis for power-sharing and mutual empowerment. Social power is used strategically to advance in-group interests with group conflict, McGarty, et al (2000). Power is used differentially to disadvantage the out-group. Coercive power may be used against the in-group in high threat situations to prevent desertion. Individuals with low or moderate power are unable to advance individually then they more likely to embrace groups that will give them collective power.

Jost and Elsbach (2001) show how status and power in organisations can disrupt social identity processes. Using Social Justification Theory they show how some low status out-groups internalize a sense of their own inferiority.

Moreland et al (2001) show how people join, integrate and can leave workgroups. Their original work is founded on three key principles, namely; evaluation, commitment and role transition and demonstrates the building of trust and commitment between new and old members of a group. This has important consequences in group dynamics and differentiates specifically between new and older members of a group, demonstrating the interaction of group commitment towards and from individuals. They show how individuals develop different relationships with a group over time, as shown in the diagram below. Moreland et al’s, original work was founded on Rational Exchange Theory, however, they re-evaluated their research using Self-Categorization Theory based on prototypicality and raised questions about the transformation of the group prototype over time.
Prentice et al (2006) researched the attachment of individuals to both common-identity groups and common-bond groups with results that may have important significance to this study. They suggest that rather than these two groups types being seen as competing theories of group development that they are separate processes in the structure of groups. This would suggest, from a systems perspective that Social Identity Theory does not have the requisite variety to explain all group types and this will be an important factor in the assessment of whether or not Social Identity Theory itself has requisite variety. Their research found evidence to support both theories, specifically, that groups can be ‘top down’ and based on a common-identity, or that they can be ‘bottom up’ and based on a common-bond between members. Either way they suggest that ‘group dynamics’ depend on how group members cognitively represent their group:

"Bottom-up accounts suggest that group attachment is an emergent feature of attachment to group members: Once there are sufficient interpersonal bonds among a collection of individuals, they will become a group. Top-down accounts suggest that group attachment originates in social categorization and leads to, rather than follows from, interpersonal bonds (see also Miller and Felicio, 1990)." (Prentice et al, 2006, p93)

Figure 2.1 – Commitment over time with group membership From Moorland and Levine (1982)
Importantly for this research they identify that a common-identity is necessary to sustain the group in the long term, in other words for it to be viable and they speculate that this common identity may come from a bottom up or a top down process, although they also stress that there is no reason why a bottom up process, namely a group formed from a common-bond should always achieve a group identity;

“…social movement researchers have noted that participants must have a common identity that constitutes a significant portion of their social existence to sustain collective action (see Blumer, 1953; Scott, 1990; Turner and Killian, 1957). Similarly, studies of utopian communities have revealed that enduring communities tend to have strong group identities.” (Prentice et al. 2006, p92)

2.6 Social Identity and Personal Identity

Lastly Stets and Burke (2000) demonstrate the connections between Identity Theory, which focuses on personal identity, roles in organisations, and Social Identity. Stets and Burke argue that there are close correspondences between the two theories that demonstrate the interconnections between individual behaviour and group behaviour. In essence these are that Social Identity emphasises “who one is” while Identity Theory focuses on “what one does”. Stets and Burke suggest that both “being and doing” are key aspects of identity and combining the two provides a more complete social theory. The suggestions by Stets and Burke imply an interplay between personal identity and group identity (role).

2.7 The Search for Viability in Social Identity Literature

During the investigation to determine if Social Identities are viable systems it was evident in the review of the literature that nearly all the research in Social Identity Theory focused on the dynamic nature of group formation. It was noticeable that little comment was made about how groups become ‘enduring’, which would suggest viability. There were, however, three significant statements that were found to suggest a recognition that group social identities could be viable;

“…with groups that they feel will provide them with an enduring sense of self because they provide a “valued and self-involving opportunity for membership (Haslam, 2004, p36).

“…viable variability may be relatively modest due to the anchoring effect of enduring and highly accessible representations of important groups we belong to or know about” (Hogg et al, 2006, p10),

One reference was found that suggested the possible autopoietic behaviour of groups;
“…on the contrary, group prototypes are grounded in consensual views that constitute a social reality that is reinforced over and over again.” (Hogg et al, 2006, p11)

Another important reference that hints at an understanding of complex systems was;

“…this concept of schemas fits exactly the way that the mind stores information; that is as areas of ‘related significance’ in an associative network of declarative (semantic and episodic), and implicit (procedural) memories.” (Raaijmakers and Schiffrin, 1981).

Perhaps the most interesting questions about the viability of groups, in fact what appears to be the only question comes from Abrams (1999) who queries how people achieve stability in their self-construct and suggests;

“the research problem for Self Categorization Theory is not to determine the structure of self, but to reveal the process by which the self becomes structured.” (Abrams and Hogg, 1999)

2.8 Other Relevant Theories in Psychology

Psychology is a discipline with many competing and overlapping theories and no central model. While it is beyond the scope of the research to create this model the holistic nature of systems thinking tends to the inclusion of the different perspectives rather than the exclusion. For this reason theories that were originally included in the first iteration of the model are mentioned for reference.

Cognitive Dissonance - While the self-motives provide a strong influence on the self-concept and self-esteem to advance the social self; other mechanisms serve to maintain a balance with those around us and the norms of behaviour of the social groups that we belong to. Most significant of these is Cognitive Dissonance Theory, later developed by Higgins (1987) into Self Discrepancy Theory, and its opposing theory, Self-Perception Theory (Bem, 1967). People strive for consistency between their beliefs, attitudes and actions; they attempt to justify their behaviour in line with their beliefs and their self-concept, however, if for some reason, they cannot, then the inconsistency creates discomfort or anxiety and has to be resolved, either through changing the original beliefs, adjusting their self-image, or altering the facts or perception of the situation to reinstate consistency (Festinger, 1957). Cognitive Dissonance provides the System 3* audit for the self-concept.

Self-Discrepancy Theory, Higgins (1987) suggested that the exact emotions created by cognitive dissonance could be determined depending on the circumstances. Higgins suggests that each person holds a ‘self-concept’ of themselves based on their ‘actual self’
and two self-beliefs; an ‘ideal self’ and an ‘ought self’. The ‘actual-self’ is formed from observations of their behaviour while the ‘ideal self’ is an image of the person that they believe they could be. The ‘ought self’ is an image they believe others would have them be. Higgins maintains that people are constantly assessing these viewpoints from two ‘standpoints’, that of their own self-knowledge and that of their social interactions with others. From these interactions they assess, how they have behaved, what they and others aspire for themselves and what they and others are expecting of themselves. When these viewpoints conflict emotions are generated to realign the individual within a framework of normative behaviour. These emotions range from guilt, when the individual fails to live up to what is expected of them to shame when they fail to live up to their own ideals. The emotions created when there is a discrepancy are shown in Table 2.1;

Table 2.1 – Self Discrepancy Theory

<table>
<thead>
<tr>
<th>STANDPOINTS ON THE SELF</th>
<th>DOMAINS OF THE SELF</th>
<th>Actual</th>
<th>Ideal</th>
<th>Ought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed behaviour</td>
<td>Self-Concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>Hopes and wishes</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ideal</td>
<td>Actual own vs. ideal own</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Disappointment &amp; low self esteem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Actual own vs. actual other</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Actual</td>
<td>Actual own vs. ideal other</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Actual vs. ideal other</td>
<td>Expectation of punishment – anxiety</td>
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</tbody>
</table>

Self-Evaluation Maintenance Theory. People do not use self-enhancing tactics with close ‘others’ and are more likely to use self-verifying strategies (Sedikides et al 2002). Having people close to our self-concept can cause significant issues. The closeness of others will cause comparisons and reflections when their actions cause success or failure. If a person we are close to is successful at a task which is highly relevant to our self-concept than that success can decrease our self-esteem through comparison in the self-evaluation process (Tesser, 1988). Alternatively, if they are successful at something that is not relevant to our self-concept then we are likely to share in that success. This concept provides a part of the model in System 4 for evaluating the environment that is used by the individual to provided relative balance from the other comparisons they are making.

Social Comparison Theory. According to social comparison theory (Festinger, 1954), we learn how to define the self by comparing ourselves with those around us. Social comparison theory argues that beliefs, feelings, and behaviours are subjective; comparing ourselves with others provides an external, objective benchmark against which to compare our thoughts, feelings and behaviours. This again is part of the model in System 4 for evaluating the environment.
Behavioural Self-Handicapping – fear of failure can lead to a deliberate act of placing obstacles in the way of success to avoid having to face the emotional consequences of failure (Berglas and Jones 1978).

Social Impact Theory. Social impact theory developed by Latane (1981) posits that the strength, immediacy and number of people constitute key factors in social influence. Strength is a measure of influence, power or intensity that a person believes the group has. These are determined by such factors as age, social class previous relationship or anticipated future.

Dynamic Social Impact Theory. Latane (1997) maintains that there are four components that determine how ideas and beliefs are transmitted through social systems. These are consolidation, clustering, correlation and continuing diversity. Consolidation occurs when those with a minority opinion adopt that of the majority, clustering relates to those that are geographically closer that will merge ideas and beliefs. Correlation is the relation of previously unconnected ideas and lastly continuing diversity suggests that because of the creation of subgroups through clustering consolidation will never be totally dominant.

2.9 The Complexity of Human Systems

We can see from the previous section that human nature is diverse, complex and dynamic and while psychology provides us with a model of group forming behaviours it does not recognise or provide an explanation for the existence of enduring structure, assuming that such a thing exists.

The dialectic arguments between structure and agency in sociology (King, 2011) or between functionalism and constructivism in cultural and philosophical studies, demonstrates clearly that there is an ontological dichotomy between how social structures emerge from the interrelationships of human beings; this is central to our discussion of how humans create enduring groups and the basis for this research.

Unfortunately social systems have proved to be difficult to study and particularly difficult to apply traditional scientific methods to. Boulding (1956) assigns social systems to level 8, the highest practical level in his 9-point ‘hierarchy of complexity’ and concludes that they were among ‘the most complex systems imaginable’; surpassed only by “transcendental systems yet to be imagined”.

Several authors have suggested that traditional methods are inadequate for the study of social systems;

"…on their way to increased complexity, systems acquire new properties through the phenomenon of emergence. Self-organization, self-production, self-reference, are features that
appear only beyond some threshold of complexity and are therefore not understandable by the usual mechanistic natural sciences. Such necessary extension of science requires not only new theories and new formal tools like non-linear dynamics, chaos theory, fractals, cellular automata, cybernetic networks, etc. but also, in our opinion, invites us to question the usual epistemological and ontological presuppositions.\(^\text{1}\) (Schwarz, E, 2005, p1)

Hayek (1989), in his Noble Prize lecture entitled “The Pretence of Knowledge” suggested that applying scientific methods to social systems is;

“… often the most unscientific, and, beyond this, in these fields there are definite limits to what we can expect science to achieve” (Hayek, 1989).

Elster (1993) demonstrates why this might be the case by arguing that causality is the most effective methodology for the natural sciences involving inorganic matter; where cause and effect are often evident. For the inorganic natural sciences, however, functional explanations, working under an overarching causal explanation (such as natural selection) can demonstrate the purpose of a system or its behaviour. However, neither of these approaches works for social science where Elster suggests that intentionality is the only means of understanding human actions.

The Theory of Intentional Stance (Dennett, 1996) defines three levels of abstraction. The physical stance, is the domain of the natural sciences, physics and chemistry where interest lies in mass, energy, velocity, and chemical composition and causality can be directly attributed. The design stance, is the domain of biology and engineering and is focused on purpose, function and design. However, most abstract is the intentional stance which is the domain of software and minds. At this level, we are concerned with such things as belief, thinking and intent.

This view of complexity is reflected by those studying Complex Adaptive Systems. These are systems in which many agents and subsystems interact in densely connected networks. Social groups with multiple inter and intra relationships can be considered as complex systems. The key aspect of these structures is that:

“… The whole cannot be understood by being divided into or reduced to its elements … interaction and connection are non-linear, and non-causal determinism is the rule” (Wulu, 2007, p398).
This touches on the systems concept of “emergence” (von Bertalanffy, 1951). Emergence is a property that can only be observed with synthesis as the properties only ‘emerge’ when the sub-systems combine, when the system is examined by analysis they disappear. Cilliers (1998) argues that a complex system “…cannot be reduced to a collection of its basic constituents” (Cilliers, 1998, p10).

The use of quantitative studies in systems research, particularly using statistics, is difficult because of the nature of complex systems. System Thinking (von Bertalanffy, 1951, Wiener, 1948, Ashby, 1956, Beer, 1979, Cilliers, 1998) maintains that all internal couplings within a “system of systems” are feedback loops. A complex system is a “circularity” in that there are no readily recognisable causes and effects.

These arguments demonstrate that to identify and verify “what it is” in a social systems means that, at least in part, our theory must be studied holistically and with synthesis. That is as a whole system and not a series of constituted parts.

The use of ‘agency’ within many studies is also a problem that should be recognised. Most social theories abstract human behaviour in some way; it is simplified, generalized or conceptualized. This is, after all, the basis of the scientific method based on reductionist and deterministic thinking, developed from Descartes (1637, 1960) but in reducing human behaviour in this manner the full richness and complexity is lost. King (2011) examines the ontological dualism of structure and agency which he claims is “hegemonic” in current social theory and advocates a return to a focus of sociology based on “social relations”; in other words a return to understanding how humans actually behave. The problem is expressed well by Layder;

“We are emotionally unique beings, not simply rationally self-reflexive agents choosing the most appropriate way of maximising our satisfaction (as suggested, for example, in rational choice theories). Emotions such as jealousy, anger and hatred are capable of disrupting the smooth veneer of social situations and relationships. Motivations associated with these emotions drive us to behave in ways contrary to custom, ritual and routine, although this behaviour is also shaped by important social components. Such emotions and motivations ensure that we are never entirely the creatures of society. We are distinct individuals whose psychological requirements are often antithetical to the social order. Because we are unique, the fit between the individual and society is imprecise, imperfect and much more tenuous than most sociologists would allow indeed, from the point of view of domain theory, anxiety and insecurity are never completely allayed, conquered or successfully ‘inoculated’ against. Every situation
must be regarded as a potential threat to inner security for even the most calm and mentally stable of us.” (Layder, 2006, 275).

Recognising the complexity behind the multiple interrelations in groups we will treat the social system of group formation as a complex system and examine it from this perspective.

2.10 Applying System Thinking To Social Groups

Systems Thinking is a holistic, multi-dimensional, recursive approach developed by Bertalanffy (1951), Wiener (1948), and Ashby (1947). They studied the behaviour of systems, taking as their guide the behaviour of “organisms” in nature. Their ideas of, holism, closure, purposefulness, transformation, feedback, variety, emergence, boundaries, hierarchy, differentiation, equifinality and multi-finality all provided an insight into the structure and flow of information, energy, entropy and resources within systems and provided a framework for hard systems concepts using a Functionalist approach; known as General Systems Theory.

It is not surprising that many of Systems Thinking principles were absorbed by sociology and psychology. Norbert Weiner (1948), considered the father of cybernetics, developed the concepts of “feedback” and “transmission of information” that he applied to social systems. Weiner’ ideas were adopted by Parsons and used to help construct his Social Theory of Action. Katz and Kahn (1966), applied the principles to create the field of organisational psychology and Luhmann (1995) used Spencer Brown’s Laws of Form (1994) and Varela and Maturana’s (1979) autopoiesis to develop his Social Systems Theory.

However, while systems thinking was readily applied to traditional sciences new problems were encountered when it was applied to social systems.

“Living systems are self-structuring as well as self-maintaining, they are autopoietic in the meaning put forward by Humberto Maturana. Social systems are more than just self-structuring and self-maintaining, they are additionally self-creative. This relates to the fact that individuals are active, self-conscious subjects that can choose to a certain extent in which systems they want to live and how their systems are designed. And they have the ability to create new systems and structures”. (Fuch, 2002, p2)

Von Foerster's (1981) work provides an insight into the nature of the complex world of social systems with 2nd Order Cybernetics (the cybernetics of cybernetics), which questions the position of the observer in a system. Von Foerster (1981) and Maturana and Varela (1980, 1986) recognised that much of General Systems Theory took the view of an objective observer, outside the system. Von Foerster recognised that every observer is a ‘part of the
system’. From this perspective, von Foerster maintained that it is difficult to be objective and to understand the whole system. This is highly relevant to the study of social systems where we are always ‘inside the system’ and it is impossible to be an external observer.

From this new perspective von Foerster offered theories of cognition and language that explained how reality and meaning are created in society (von Foerster, 1989). He maintained that information and meaning only arise from self-organized systems which have a practical and historical relationship with a “domain of living”; a “domain of living” is explained as an ‘autopoietic system’ as described by Maturana and Varela (1986). Maturana and Varela’s concept of autopoiesis provides an understanding of how “self-production” of boundaries and identity can occur. Autopoiesis is a vital concept that can go on to explain how communication happens in social systems and how the creation of meaning can be achieved. Mingers explains an important connection between autopoiesis, closure and adaptation. From Maturana and Varela work, Mingers connects autopoiesis to closure through the "continual circular process of production”;

“A continual, circular process of production must be established that produces all that is necessary for continued autopoiesis. There is thus a deep closure of the system – it produces that which is necessary for it to continue to produce that which is necessary for it to continue to produce . .

He then connects closure to autonomy;

ii. Since the system produces itself it gains a significant degree of autonomy – it depends less on other entities for its continual existence. At the same time, if it ever fails to produce that which is necessary then autopoiesis must break down and the entity will disintegrate. No functionalism is involved however – the system either contingently maintains autopoiesis, or it does not.

And finally clarifies that closure means to be organisationally ‘closed but structurally open’

iii. The theory distinguishes between the structure and the organisation of a system (see glossary). The structure (the actual components and their relations) may change dramatically over time, or may be realised in many ways, so long as the organisation maintains its relations of self-production. It can be said to be organisationally closed but structurally open.” Mingers (2002)
Geyer (1995) examined the advances of the application of cybernetics to the study of social systems since its development in the late 1940s and recognised the problems created by self-referential systems, such as social collectives, in that they are subject to *self-fulfilling* and *self-defeating* prophecies (Henshel, 1990) where;

“the accuracy of earlier predictions, themselves influenced by the self-fulfilling mechanism, impacts on the accuracy of the subsequent predictions. In much of empirical social science research, however, self-referential behaviour does not loom large which is rather amazing in view of its supposedly being an essential characteristic of individual human functioning” (Henshel, 1990, p20)

Geyer recognised that the 2nd the Order Cybernetics of Von Foerster impacted significantly on the study of social systems; stating;

“futility of large-scale and detailed planning efforts has led to the increasing realization that both individuals and organizations are to a large extent self-steering.” (Geyer, 1995, p20)

This, he suggested leads, in complex modern societies, to highly dynamic and interactive systems that are generally “far-from-equilibrium” (Prigogine and Stengers, 1984) where relatively small inputs can trigger large changes. These are the properties of Complex Adaptive Systems (Langton, 1989, 1990) and Geyer suggested that this model represented social systems with their properties of *self-organizing*, *self-reference* and *autopoiesis*. These properties produce systems with “their own strategies and expectations, with intertwining processes of emergence and adaptation.”

To Geyer, this created a system that was almost impossible to study. *Self-fulfilling prophecies, 2nd Order Cybernetics and Complex Adaptive Systems* that changed and fluctuated constantly creates *methodological* problems for social research;

“It is already very difficult to apply the principles and methods (e.g. feedbacks and non-linearities) of first-order cybernetics to empirical social research, much more so than to sociological theory, and nearly impossible to incorporate a second-order cybernetics approach in one’s research design. Indeed, as far as empirical research is concerned, second-order cybernetics may be a bridge too far, given the research methodology and the mathematics presently available.” (Geyer, 1995, p27)

Geyer concludes;
“For the time being, sociology should perhaps model itself more on meteorology than on the natural sciences, and force itself to give up the ambition to make accurate medium- and long-term predictions, except in delimited areas of research where complexity is still manageable or can be more or less contained. Ex post facto explanation of how things have come to be as they are is already difficult enough for social scientists nowadays. The best they may do at the turn of the millennium is to get a grip on the underlying laws of change, perhaps by a theory transfer from those subfields within biology where second-order cybernetics was developed, and consequently to develop further the theories, the non-linear mathematics and the simulation techniques required to investigate the growth of complexity of human society.” (Geyer, 1995, p28)

However, while Geyer suggested that the study of social systems was impossible, von Foerster did not take the same view. While his perspective is highly constructivist he nevertheless recognises that stable ‘behaviours’ can emerge from this confusion through processes that transform onto themselves, in what he calls ‘eigenbehaviours’.

Von Foerster (Poerksen 2003) recognised that the ‘machinery’ of Spencer-Brown’s ‘Laws of Form’ (1994) enabled a new logic that allowed language to speak about itself, that was;

‘…constructed in such a way as to permit application to itself. His operator can operate on itself and in this way becomes part of itself and the world it creates”. (von Foerster cited in Poerksen 2003)

For von Foerster this was important because language limits our ability to understand self-reflective systems. From this perspective von Foerster (2003) suggested a ‘Cognitive Foundation of Behaviour’ that implied that cognition must be built on a recursive structure that produces processes that map to themselves; von Foerster suggests that these ‘eigenbehaviours’ are how cognition and stable social structures develop from the multitude of independent actions. Unfortunately von Foerster fails to explain in any detail what these eigenbehaviours are.

A different perspective of cybernetics and its connection with social structures and viability is provided by Stokes (2004) who suggests that the VSM provides a way forward;

“There were two problems applying cybernetics to the social realm. One was a conceptual problem – how exactly do you apply the insights and ideas of cybernetics to social science? Efforts to
date must be judged to have failed, including socio-cybernetics (Geyer and van der Zouwen 1996). The other was a matter of the ‘structural coupling’ of a cybernetic sociology to the historical conditions of society. I want to propose that both problems have now been overcome, and that the concept of identity holds the key to both. In relation to the first I want to suggest that Stafford Beer’s work gives us the conceptual infrastructure necessary to unpack the potential of the concept of identity as a foundational concept of social science. In this sense, the concept of identity is intrinsically a cybernetic one, which describes both a process and a structure. Secondly, it has now become possible to apply these insights and ideas because society has become what I call an ‘identity’ society.” (Stokes, 2004, p1)

2.11 The Problems with Systems Thinking as a Model of Human Behaviour

While Hard Systems Thinking provides an account of the structure of social systems it does not provide any representation of human behaviour, so much so that concern has been expressed about the application of Systems Thinking. Some found the analogy of organisations as organisms to be troublesome (Kast and Rosenweig 1972), while Hoos (1972) documented the many difficulties that arose in trying to apply systems analysis to issues of public policy. Roberts et al (1974) bemoaned the fact that Katz and Kahn’s application of System Theory to psychology is constructed at such an abstract level that it is difficult to reduce its principles to testable hypothesis. Many of these problems come from the level of abstraction applied to social systems theories which could be related to Dennett’s (1996) three levels of abstraction. Dennett argues that it is best to understand human behaviour at the level of the intentional stance; this implies a low level of detail in exchange for a better generalization. It is this generalization and high level of abstraction that makes social system theories difficult to apply.

Jackson (2000) and Flood and Jackson (1991) provide comprehensive analysis of System Theories and identify their strength and weaknesses. In particular, they categorise Systems Theories in their ability to deal with Simple or Complex problems on a dimension of Unitary, Pluralists and Coercive contexts, see Figure 2.2;
From Jackson's (2000) analysis it can be seen that no system theories are able to resolve issues that deal with complex coercive problems except maybe postmodern systems thinking of promoting diversity. That 'hard systems' such as Operational Research fail to allow for human nature is almost self-evident, however, the failure of the interpretivists and constructivists approaches to deal with coercive issues demonstrates that they too fail to engage the full scope of human interaction.

The various interpretivist/constructivist methods and theories, such as; Soft System Methodology, Interactive Planning and Social Identity Theory etc… seek to establish a common 'social reality' amongst the participants. Checkland’s SSM does this through the mutual construction of 'Root Definitions' while Ackoff tries to achieve consensus through the participation of the constituents in 'interactive planning' and Social Identity through a common prototype.

Churchman's (1979) theory of aligning world views (Weltanshauung) by seeing “the world through the eyes of another” provides the underlying philosophical theory for the interpretivist/constructivist approach. Flood and Jackson’s analysis raises three main issues about this approach; firstly, that they are unable to deal with coercive contexts because they rely on Churchman’s theory of aligning peoples’ world views (Weltanshauung) which can occur only in a cooperative environment.

“If participants are in a coercive relationship to each other, they do not share common interests, values and beliefs are likely to conflict, they cannot agree upon ends and means and genuine
compromise under present systemic arrangements is not possible” (Flood and Jackson, 1991, p158)

Secondly, that by containing all problems within the context of self-created social realities is a narrow interpretation of the nature of problems;

“…Interpretive thinkers see social reality as the self-conscious creation of human actors. Problems arise when individual actors’ perceptions of reality do not overlap... This is really a very limited view of how problem situations occur. It ignores, for example, the cybernetic insight that organization can fail to function properly because communication and control systems are poorly designed. The idea of cybernetic laws, which must be obeyed when complex systems are being organised is not taken seriously by soft systems thinking... (Jackson’s, 2000)

Thirdly, that they fail to acknowledge the use of power and politics;

In essence, and to use Habermas’s threefold categorisation of human interest, SSM serves only the practical interest in bringing about mutual understanding. The technical interest in prediction and control of natural and social affairs cannot be encompassed within the rationality of SSM. Similarly, the emancipatory interests in ‘communication free from distortion and in realising participative decision-making free from the effects of power relationships’ is not granted attention. (Jackson, 2000)

The interpretivist/constructivist approach, while arguing that each person’s concept of social reality is solely self-constructed and different from everyone else fails to address the issue of mutually created social realities that it seeks to establish. Once the process of SSM, Interactive Planning or in our case Social Identity Theory has created a set of shared beliefs how do these shared beliefs persist or endure, or do they just dissipate.

If they dissipate then it appears that there are no enduring identities created by shared beliefs, although we should be open to the idea that identities could be created by other means, i.e. shared purpose. If, on the other hand they persist, then we have to acknowledge that we have created a shared belief and hence a ‘group’ that can be seen, in certain contexts, as an entity. We must then accept that we may not be dealing with social realities that are only self-constructed and individual but ones that are group created and social. We also have to acknowledge that processes that create social groups with shared beliefs may be self-organising, in other words able to create themselves, not just requiring the interactive
systems approach to achieve success, in which case we have a system that is creating its own solutions that moves beyond the interpretivist/constructivist understanding.

2.12 Complex Systems and Representation

Cilliers (1998) identifies the properties of complex systems as; consisting of large numbers of richly connected [local] elements that are open to their environment which dynamically interact in a non-linear manner using either positive or negative feedback to maintain their system far from equilibrium in a state that is [inherited] from its past conditions. He explains that the;

“behaviour of the system is not determined primarily by the properties of individual components but is the result of complex patterns of interaction” (Cilliers, 1998, p3)

He argues that there are two ‘indispensable’ capabilities of complex systems; firstly they must be able to store information for future use and secondly that they must be able to adapt their structure when necessary (1998, p10) i.e. they must be self-organizing. Cilliers (1998, p15) shows that to store information for future use a complex system must have a way to represent the ‘meaning’ of this information. This could possibly be done in two ways; through rule based systems that use syntactics and semantics or through ‘distributed representation’ where the information is stored in the very structure of the system itself (neural networks).

Since a complex system cannot be simplified, otherwise it would not be complex it would only be complicated, it cannot be represented properly by ‘rule based’ systems because these rely on simplifying the system. In representing information in the system with a rule, the process of simplification would require that meaning was lost.

“…a complex system cannot be reduced to a collection of its basic constituents, not because the system is not constituted by them, but because too much of the relational information gets lost in the process.” (Cilliers, 1998, p10)

Distributed representation, therefore, is the only way to represent or store information in a complex system, however, to do so means reconstituting the exact same system. Within a distributed representation the system can only be understood from a system perspective;

“Saussure (1974) presented us with a system of distributed semiotics by arguing that the meaning of a sign is a consequence of its relationships to all the other signs in the system. Meaning is therefore not a specific characteristic of any discrete unit, but the result of a system of differences. In order to generate the meaning
of a sign, not only that sign, but the whole system is involved – the meaning is distributed." (Cilliers, 1998, p81)

So if we want to store information in a complex system or if we want to model the system we cannot do so easily without recreating or being part of the systems itself. This postmodernist perspective presents a dilemma. How do we model or represent complex systems in order to be able to study them?

To do so Cilliers suggest building and training neural networks to learn to solve the problem themselves, however, he also accepts that it is feasible to take a ‘snapshot’ of the system so long as we are aware that this is a poor representation;

“Despite the fact that we cannot represent the essence of a complex system in determinate terms, we cannot resist, or perhaps even avoid, the construction of some kind of interpretation of the nature of the systems at a given moment. These interpretations, however, are in principle limited. We are always constrained to taking snapshots of the system. These shots are always take form a certain angle and reveal some aspect of the system at some moment. Nothing prevents us from attempting explanations of the system – we can take as many pictures as we want – as long as we realise the limitation of each particular one." (Cilliers, 1998, p80)

This viewpoint is very similar to Stafford Beer’s (1985, p6) concept of System In Focus. Whereby, we bring the elements of the system that we wish to examine to the forefront but accept that we cannot isolate them without the systems losing its integrity.

One way to overcome this issue is, having taken a ‘snapshot’, to then reconstruct the relationships and meaning in the system as best as possible by developing an understanding of its components and key processes. To do this from a ‘snapshot’ of the system a process of inductive, deductive and abductive reasoning can be used to analyse and synthesis the components and key processes into a more complete representation of the system by using the process described by Barton and Haslett (2007) Their method brings together Peirce’s (1931-35) theory on abduction combined with analysis and synthesis. An even greater understanding of a complex dynamic system could be achieved by taking a series of ‘snapshots’ as part of a longitudinal study.

2.13 The Development of Viable Systems

Von Foerster (2003) demonstrated that memory alone is insufficient to produce cognition, and shows that only a recursive process that has the faculties to perceive, remember, infer,
learn, evaluate communicate and move can do so. Furthermore, he suggests that the recursivity of these processes will produce ‘eigenbehaviours’; that is behaviours that map to themselves and so never change. This is the very essence of cognition, identity and social structure at successive levels of recursion, but what are they? Stafford Beer (Beer 1972 p 87) suggests that they are the ‘invariant’ elements that make a ‘viable system’.

We have seen from Social Identity Theory that a shared identity is the basis for the formation of a group. This shared identity could be a common trait, a mutual need or something much deeper such as shared beliefs and values. The principles of comparative and normative ‘fit’ from Social Identity Theory provide us with the mechanism by which identity creates human groups.

The key suggestion, and the basis for this research, is the idea that should a salient group prove to be viable and, should it be able to maintain its viability with its environment, then it will continue to exist by preserving its identity. Further by continuing its existence it will establish the structures and ‘meaningful relationships’, as emergent systems, that we come to recognise as a fundamental part of that group’s identity;

“A viable system is one sustaining the capability for independent existence as a recognizable identity. (Beer, 1983b)

Schwarz (1997) demonstrates exactly this process with his overarching theoretical framework for systems thinking; the Three Domains Model. This is a trans-disciplinary meta-model that can explain all systems. This is particularly relevant to our research because it demonstrates how systems develop. Schwarz proposes the “six cycles of viable systems”; in which the iteration of several cycles generates long term evolution toward ever more complex and autonomous systems, characterized by the successive appearance of six circular relations of increasing abstraction. The six logical cycles are; entropic drift, morphogenesis, vortices, feedback/homeostasis, autopoiesis and autogenesis. Schwarz demonstrates (1997) how change and evolution occurs in the meta-model through a “spiral of development, maturity, drift and metamorphosis”. Put simply Schwarz suggests that independent systems react with one another, and if the interaction creates a mutual feedback response (vortices), where one affects the other, they become self-regulating (homeostasis), they may then start to develop a common system that is self-organising. If this system is able to produce itself then the system will become autopoietic, that is, able to change its boundaries and react to its environment; in system terms it will start to demonstrate “closure”.

While system development may start off in the phenomenal domain, that is the plane of energy or real objects, at each stage of development it starts to connect with the other domains, those of information and ultimately of “being”. Autopoietic systems have, by definition, to be able to connect to the plane of information. Autopoietic systems, are
essentially life forms, able to adapt and react to changes in the environment, however, they may not be aware of this change. At the next stage of development their system will create a connection to the plane of “being” when it starts to be capable of \textit{self-reflection}; this process is known as \textit{autogenesis}. From here the system becomes \textit{self-reflective} and \textit{self-conscious}.

The Figure 2.3 shows the three domains, namely; “being”, “thinking” and “doing” or the \textit{existential}, the \textit{noumenal} and the \textit{phenomena} (from Schwarz 1997). Schwarz’s model provides us with an understanding of how systems develop; however, it is very abstract in its design and to make sense of it requires that we apply it to the real world processes that we have seen in human behaviour.

An examination of viable social systems was undertaken by Yolles (2000) who developed a theory of Social Viable Systems. (Yolles, 2000 and Yolles and Guo, 2003). This provides a rationale for viable social processes based on the cybernetic principles of Schwartz’s Three Domains Model applied to Habermas’s Theory of Knowledge Constitutive Interests. It suggests that all coherent social communities can be modelled in terms of the three domains and have cognitive properties because they relate to human orientations. While this is highly significant to our work, and indeed provides proof that these concepts can be connected, it nevertheless is very abstract and cannot be applied directly. So we need to establish what we mean by viability.

\textit{Figure 2.3 – Three Domains Model – Schwarz 1997}
2.14 Viability

Within Systems Theory there are several systems methodologies that tackle the question of viability, but only three that tackle it directly; the Viable Systems Model (Beer 1981), Living Systems Theory (LST) by Miller (1965) and Aubin (1991) Viability Theory. Aubin’s theory is a mathematical based and algorithmic and beyond the scope of this research.

Living Systems theory identifies seven hierarchal levels of systems of increasing complexity performing life processes; cell, organ, organism, group, organisation, society, and supranational system. These are all open systems, which are in turn made up of subsystems processing imports, throughputs and outputs of various forms of matter, energy and information.

Beer maintained (1972 and 1979) that to survive in its environment a viable system has to exhibit five key attributes. These “sub-systems” determine the identity, purpose and behaviour of the overall system and coordinate its activities and audit its processes. Importantly, Beer determined (1959: 169) “that no control system can discuss itself, and that a higher order system is needed in order to describe the behaviour of a system in a given language.”

The inclusion of a meta-system into the model was a unique insight by Beer that provides for higher order management and direction but more importantly adopts the concepts of autopoiesis and autogenesis proposed by Maturana (1975) and, as we have seen from Schwarz; is necessary for the development of systems which enable a system to adapt and change to developments in the environment; to reproduce or modify its identity though self-reference. Beer (1979) defines self-reference as; “the property of a system who’s logic closes in on itself; each part makes sense precisely in terms of the other parts, the whole defines itself.”

Each part of the model, Beer developed, is recursive, depending on the “system in focus” at any time; so that the whole model can represent a complex system of systems. The key parts of the system are linked though “homeostats” that maintain the whole system in balance by monitoring the “variety” of the states of the environment.

Schwaninger (2006) identifies the comparisons between Living Systems Theory and the Viable Systems Model. They both have similar backgrounds and pedigrees, both come from systems theory and cybernetics and both models represent;

“...concrete, realistic systems which exist and evolve in time and space. This differentiates theirs from other theories, for example from Luhmann’s sociological theory (Luhmann, 1995), which deal solely with abstract systems of action or relationships”.
(Schwaninger, 2006, p343)
However, Schwaninger identifies very real differences as well. Miller's perspective is *positivist* while Beer's is *constructivist*. While this enables more precise analysis in Millers model it severely limits its use for the purpose of analysing “human behaviour”. Beer saw his model as a “heuristic aid” to create discourse about the diagnosis and design of organisations, human aspects such as ethos, meaning, sense making and self-reference are regularly mentioned which is not possible in Millar's model.

Miller's concept is *objectivist*, complexity increases unbroken and drastically up through every level. As we have seen Beer adopts the concept of *recursive* complexity management distinguishing between recursive structures and hierarchical ones.

In Miller's theory the purpose of the system is life; Beer defines *viability* explicitly as the maintenance of identity, “the purpose of the system is what it does” Beer (1979).

Schwaninger concludes that The Living Systems theory has better empirical underpinning, while the Viable Systems Model has a stronger theoretical claim and diagnostic potency. The preference for our research will, therefore, be the Viable Systems Model.

### 2.15 Foundations of the Viable System Model

The VSM is a complex construct that can be used in a structured, functionalist way or as an *epistemology* to understand a viable complex system. It is built on the principles of cybernetics (Wiener 1948, Beer 1966, 1971, Ashby, 1947) that developed from General Systems Theory (von Bertalanffy 1951). Before examining it in detail a brief overview of GST is relevant to understand the concepts of what we are dealing with.

From the foundations of Ashby’s Law of Requisite Variety in particular, and General Systems Thinking in general, Beer (1966) introduced to systems thinking the metaphor of “system as neurocybernetic”, that was a significant extension to the thinking of the time. Beer’s insight was inspired by Gödel’s discovery that no system could describe itself, he realised that any system needed a meta-language to be able to function, out of this he developed the concept of a meta-system. Beer’s introduction of the Viable Systems Model (VSM) provided a *holistic, recursive* and *autonomous* model of an open system that was able to demonstrate ‘closure’, that is to maintain itself despite perturbations in the environment. *Viability* was seen by Beer as an emerging property of a complex system.

Beer recognised the significance of von Forester’s, Maturana and Varela concept of 2nd Order Cybernetics and autopoiesis; in fact he wrote the foreword to Maturana and Varela’s book in 1986. He saw the workings of *autopoiesis* within the VSM. However, Mingers (1992), disputes that Maturana and Varela intended for the concept of *autopoiesis* to be used with social systems or that it can be applied meaningfully. This critique has implications with respect to the use of the VSM for social systems and it will be examined in depth later in the
review. The key property of the VSM is that it recognises the concept of ‘system identity’ and demonstrates how systems can preserve this, in other words “survive”, in relation to their environment.

“The goal of survival is different from other goals. It is a purpose that closes in on itself; it is a matter of preserving identity (Beer, 1979, p. 114).

“…The remarkable property of the viable system is that it is designed to preserve its identity. The enterprise may last for hundreds of years, changing all of its components parts many times, and assimilating many kinds of change on the way – and yet it is recognisably itself.” (Beer, 1979)

…The primary characteristic of a viable system is not the power of self-reproduction but of self-production. It is continuously in business to produce itself, to be what it is, to preserve identity” (Beer, 1979, p. 277).

Beer, identified (1972 and 1979) five key functions, or attributes, that a viable system has to have to maintain its identity. These are System 1 – the transformations that are conducted with the environment, System 2 - the creation of group cohesion, System 3 – the creation of group coherence, System 3* - the audit of the system, System - Future planning, System 5 – the ethos of the system. As well as defining the structure and processes of the VSM, Beer also defined several ‘laws’ necessary for its function. Stokes (2006) defines a viable system as;

“A viable system is recursive. It is intrinsically scalar in that it replicates itself in self-similar patterns and in a nested manner at all levels of organization. It is essentially embedded in an environment, which is the source of its challenge to acquire “requisite” variety. It respects the autonomy of the parts that make it up, with one proviso that is agreed by all: that restraints on autonomy shall be computable functions of the purposes of the system and no more than this. Such purposes are given in the organization’s self-identity. Furthermore, a viable system provides a means for the co-ordination of the interactions of the level one autonomous units so as to avoid oscillatory behaviours among and between them. It provides a further means of systemic cohesion by seeking to achieve synergies among the unit elements. It does this through a process of resource bargaining and of intervening to maintain the integrity of the whole if threatened. It is also at this level that a certain selective bias is evident (reflected in resource bargaining outcomes) –activities more in accord with the identity of the system as a whole are typically favoured over those that do not. Engulfment and isolation are both extremes on the continuum of possible outcomes here. Up to this point, the system has been inwardly focused on issues of “here and now”
cohesion and integration. However, any viable form of organization must also be oriented to the two major environments in which it is embedded: its contemporaneous environment of stakeholders and others as well as its future environment. The tension between the “here and now” focus and the “there and then” focus must be managed. They are so done under the sign of identity that provides the reference standard for all-inclusive infra-level regulation. (Stokes, 2006, p133), Beer (1987) defines autonomy for the VSM as specifically referring to the relationship of System 1 to the meta-system and other subsystems, He explains that the only way in which subsystems can maintain their freedom to absorb variety for their own effectiveness but at the same time connect with the purpose of the system as a whole is if they have a “convergence of purpose” that is;

“the freedom of an embedded subsystem to act on its own initiative, but only within the framework of action determined by the purpose of the total system.” Beer (1987)

For the subsystems to have convergence of purpose then autonomy must be “computable functions of the purposes of the system and no more than this”

Mingers definition of autonomy and closure, see Section 2.10, relate closely with Beer’s. For each System 1 to maintain autonomy in the VSM it must achieve closure within itself. Beer defines closure as “self-reference: the assertion of Identity” (Beer, 1987). In Mingers terms it must be ‘organisationally closed but structurally open’ where ‘organisation’ refers to the relationships between the subsystems own elements and components. However, to be viable a system itself must also be ‘organisationally closed but structurally open’ in its totality as well as its subsystems because the system is recursive and self-reflective. A viable system, therefore, must achieve closure at each level of recursion.

Since Beer relates autonomy to “embedded subsystems” the independence of the system as a whole from its environment, achieved by its closure will be referred to as “organisationally closed” or “organisational closure” of the system.
Figure 2.4 – The Viable Systems Model by Stafford Beer

**Figure 37**

**THE VIABLE SYSTEM**

- Stafford Beer
2.16 Limitations of the VSM

A summary of the criticisms of the VSM is provided by Jackson (1988). Jackson’s critique identifies that the VSM lacks the representation of social dynamics necessary for a complete view of organisation as identified by Habermas (1972, 1974, 1979); in particular, the role of a manager in the development of organisational culture and the use of power is not well demonstrated by Beer.

A similar criticism comes from paradigms based on the idealism of Kant, primarily Ulrich (1981, 1983) and Checkland (1980, 1986); who were influenced by Vickers and Churchman. Both argue that the VSM puts too much emphasis on the mechanism of an organisation and not enough on the people. Ulrich argues that the VSM predominates with ‘intrinsic control’ because of its reflection of the ‘organic’ paradigm which defined its roots, where control is a function of the meta-system, but, he argues that it fails to address the ‘intrinsic motivations’ that occur in sophisticated social systems because it is a cybernetic model that relates to the syntactic correctness of a systems rather than that semantic and pragmatic reasons (Jackson 1988):

“The VSM predominates with ‘intrinsic control’ because of its reflection of the ‘organic’ paradigm which defined its roots, where control is a function of the meta-system, but, it is argued that it fails to address the ‘intrinsic motivations’ that occur in sophisticated social systems because it is a cybernetic model that relates to the syntactic correctness of a systems rather than that semantic and pragmatic reasons” (Jackson, 1988)

In other words the VSM fails to show the feelings of people. The particularly concern of the Critical Realists being that the VSM can be used in an autocratic way because it fails to take account of the shared purpose and values considered necessary by the Critical Realist (Ulrich and Probst 1984).

Checkland (1980) also criticised the concept of variety as “a poor measure” and “unexceptional”. Jackson dismisses these claims, however, Achterbergh and Vriens (2011) do demonstrate that from a Functionalist perspective that while the VSM is a good diagnostic tool because it provides a framework for viability from organism to organisation, it is, nevertheless, lacking as a design mechanism because “it does not positively conceptualize all these infrastructures and their design.” Achterbergh and Vriens resolve these issues by introducing de Sitter’s et al (1997, 1998) functional design parameters to the VSM.

Mingers (2002) also raises the issue that it does not make sense to apply autopoiesis to social systems that are outside of its original paradigm; that of biology;
“This is not to say that Maturana discounts the importance of Beer’s point that systems must respond to prevailing environmental circumstances. It is just that on Maturana’s view autonomy is not the mechanism through which this occurs. **For Beer, autonomy is a mechanism for adaptation; for Maturana, the parallel mechanism is ‘structural coupling’ which is something different. The point is that while autopoietic and viable systems are both autonomous, the nature of the autonomy and the manner in which it is realized in the two cases are different. However, the situation becomes more confused since Maturana (1991) does acknowledge that autopoiesis can exist in the conceptual as well as in the molecular/physical domains. Thus arises the possibility that the VSM might be a conceptual autopoietic system, if not a physical/molecular one”. (Mingers, 2002, p5)

A key issue with the VSM, and indeed cybernetics is that they are fundamentally **teleological** in nature. The VSM is built around the concept of **purpose** which most social research shies away from. Mingers (2002) raises this point;

> In debating the distinction between viable systems and autopoiesis, the teleological nature of the former is significant. Whereas notions of purpose, function and goals are pivotal to the theory of viable systems, these concepts are irrelevant to autopoiesis. No matter how you look at viable systems it is difficult to get away from the idea of purpose. Inevitably, then, when the VSM is applied to some sort of social system, it is brought forth in functional terms. In other words it is constituted as something that fulfils some external purpose.” (Mingers, 2002, p7)

### 2.17 Resolving the VSM’s Issues

In response to the criticisms of Ulrich, Espejo and Harnden (1989) argue that the VSM can be used as an **hermeneutic enabler**, Jackson (1997) explains;

> “2nd Order Cybernetics can change the way that we apply the VSM. Espejo and Harnden (1989) have argued for a different reading and use of Beer’s VSM. The VSM is no longer to be seen as “representational,” as trying to express certain fundamental laws governing the organization of complex systems. Rather, it is to be aligned with interpretive theory and regarded as a “hermeneutic enabler.” Organizational models should be seen not
as seeking to capture objective reality but as aids to orienting on going conversations about complex social issues. The VSM is a particularly good model because it permits an extremely rich discourse to unfold about the emergence and evolution of appropriate organizational forms. It provides an “umbrella of intersection” for different perspectives, and this should help us coordinate our interactions in a consensual manner. (Jackson, 2000, p278)

Espejo (1997, 2000 and 2004) also uses the framework of the VSM in respect to the management of complexity in recursive structures to show how autonomous social organisations as Complex Adaptive Systems can handle the complexity they create by establishing a social space within which social subsystems exist autonomously and thrive.

“A system’s meaning is produced by the interactions of its components. But which are these components? Are they just individuals as roles as suggested so far or are there other components as well? What is the case for a complex society or a global corporation? We can hypothesise more complex structures. Our interactions produce social systems that are constituted as roles of larger social systems and so forth. From the other side general social meanings constitute subsumed autonomous units (roles), which themselves constitute subsumed autonomous units and so forth. This constitution/unfolding of complexity is at the core of the recursive organization of social systems (Beer, 1979, 1985). However, their alignment depends on being aware of the meanings we want to produce. Working out which are/ought to be these components in complex societies is a major challenge. This has important implications for the production of desirable social meanings. (Espejo, 2000, p960).

Espejo examines processes of communications, knowledge, learning, identity, cohesion, trust, citizenship and performance using an adaptation of Luhmann’s Social Theory (1995) and Habermas’s (1984) Theory of Communicative Action. While he constructs arguments to show that management of the social dynamic is possible in the model he also recognises the need to create “purposeful” organisations, rather than to allow the “automatic creation” of unjust social structures. He also points out that understanding the behaviour of individuals in an organisation is a function of the communications channels and that it is here that organisational structure and social dynamics are joined.
Jackson (2000) considers the VSM to be an ideal structuralist tool and lists its principle advantages and disadvantages; amongst these he addresses the problem of its supposed lack of democratic purpose raised by Checkland and Ulrich;

"Because of the link between efficiency and democracy established cybernetically by Beer it is clear that the model [the VSM] depends for its full and satisfactory operations on a democratic milieu" (Jackson, 2000)

Jackson also demonstrates that the VSM can model complex structures that are vertically and horizontally interdependent; by use of its acknowledgement of recursivity, its attention to command and control that allows it to spread control democratically throughout the system, its structure for information flow and its interactive relationship with the environment. This provides a powerful way of simplifying any given system; that is, in Beer’s terms, “unfolding their complexity”; this can apply to all manner of organisations, including social collectives.

While this goes a long way to resolving the issues raised by Ulrich about the VSM it still does not answer the main criticism that the VSM relates to the organisation rather than the people. It is easy to see how this criticism can be raised as many of the examples given by Beer in his writing relate to organisational structures, however, it is also clear from the many comments that he makes that he clearly saw how the VSM related to people and their behaviour; Beer replies to Ulrich (Beer 1983a) that the VSM is democratic simply because without democracy any system will ultimately not be viable and that the VSM is fundamentally built on democratic concepts of autonomy.

Stokes (2006) examined the application of the VSM to social structures and concluded;

"The question must now be posed: does this model of viable organization contain within itself sufficient variety such that all forms of social organization can be mapped onto it? The answer is yes. Not only is a viable system designed to contain the structured antinomies of social life, but also it is designed in such a way that each portion of the model absorbs the variety disposed by the others. It does this not as a closed system but as an open negentropic, dissipative system. ‘All subsystems of a viable system control each other’ (Beer, 1979, p. 362)". (Stokes, 2006, p27)

This leaves us with Mingers criticism on the use of autopoiesis outside of actual living systems. Yolles argues that there is a relationship between "autopoiesis and its second order form autogenesis" which is supported by Jessop (1990) who maintains that autopoiesis occurs in systems that have ‘radical autonomy’. That is when a system can;
“define its own boundaries relative to its environment and its own operational
code;

implement its own programmes;

reproduce its own elements in a closed circuit;

obey its own laws of motion;

has “autopoietic take-off” when their operations can no longer be directly
controlled from outside, though there may be a variety of indirect controls that in
part constitute its “environment”. “(Yolles, 2006a, p63)

Yolles explains the connection between autopoiesis and ‘closure’;

“Autopoietic organizations become ontologically coupled
phenomenally. If the coupling is coherent … the organizations
share realities by engaging in ontological migrations. However,
the phenomenal nature of their connection implies that their
cognitive processes play an additional though incidental part. The
more usual way of explaining this is through closure. That is,
organizations are behaviourally connected to the environment to
which they are structurally coupled, but closed to the environment
in respect of their rational organizing processes.” (Yolles, 2006a
p63)

With autopoiesis the VSM can easily be extended in line with Espejo’s belief that the
elements that constitute the system are the ‘roles’, and we will see later how this extends to
‘individual identities’.

To demonstrate the function of autopoiesis within the VSM Yolles (2006b) places the VSM
within Schwarz’s Three Domains Model and shows the relationships between the domains
and the VSM systems. He places System 1 inside the phenomenal domain, System 2 and 3
within the noumenal domain connected to the phenomenal domain through autopoiesis, and
Systems 4 and 5 within the existential domain connected to the noumenal and phenomenal
through autogenesis. System 3* is part of the autogenesis process, see Figure 2.5.
Yolles goes on to demonstrate how the process of autopoiesis and autogenesis (Maturana and Varela 1980) within the phenomenal, noumenal and existential domains of Schwarz’s (1994 a and b, 1997) model creates the conditions for interaction and change between the values of individuals and the environment.

The issue of the failure of cybernetics to demonstrate ‘semantic and pragmatic’ forms of communication is addressed by Brier (1996), who connects motivation, intentionality, autopoiesis and semiosis in the creation of Cybersemiotics. The differentiation between biological, psychological and social communicative autopoiesis and the introduction of a technical concept of meaning is resolved by Brier in his development of Cybersemiotics.

Brier recognises that 2nd Order cybernetics lacks explicit and ontological concepts of emotion, meaning and a concept of signs. To overcome this he aligns Varela’s triadic calculus for self-reference with Peirce’s triadic second-order semiotics (1931-1958) using second-order cybernetics to create Cybersemiotics.

Brier shows that Varela’s calculus for self-reference, based on Spencer Brown’s “Laws of Form” provides a mechanism between observer, observed and interpretation, a triad without which no understanding of difference can exist, then in a similar way he shows that Peirce’s signs are necessary to communicate the difference;
“Signs are what Varela, Bateson and Spencer-Brown use to make and communicate their distinctions. Only signs can be thought and communicated: we maintain that a difference that cannot be communicated exists in our consciousness”. (Brier, 1996)

Explaining Buchler, (1955, p 99-100) he states Peirce’s Theory;

“…signification is never just a relation between a sign and its object (what it signifies). The sign can only signify what it is capable of being interpreted as. Therefore the interpretant is a necessary part of the sign, just as Varela has developed in his calculus of self-reference, (Brier, 1996, p241)

To create the pragmatic and semantic communications necessary for social systems within autopoietic structures, therefore requires;

Peirce’s definition is second order because all the elements of the sign process are signs themselves. Furthermore, a sign is not a thing, but a process. Peirce’s definition of signs is very cybernetic and self-organized. Thus it is the semiotic web that creates meaning. It is even so reflexive that it is second order, since all the parts of semiosis are signs. From this it follows that signification, meaning, rationality and logic are not born fully fledged but are gradually crystallized out from vague beginnings through the historical drift of praxis and the dance of languaging, and that we must accept signs and concepts as just as fundamentally a part of reality as material objects. They are also a kind of eigenvalue established in communication. In accordance with Bateson we would say that we interpret differences as signs when they really make a difference for both communicators, that is to say when they establish a shared meaning. (Brier, 1996, p242)

With this development Brier opens the door to applying semantic and pragmatic communications to the cybernetic paradigm and hence allows the use of methods of communicating ‘intrinsic motivations’ into the VSM; in particular the development of a shared purpose.

It is my opinion that this cyber semiotic frame of thinking takes us a step forward in understanding how signs get their meaning and produce information inside communicating systems. Information is an Eigen relation of actualized meaning in shared sign or
language games in a recursively operating, double closure coupling between autopoietic systems in a self-organizing universe (Brier, 1996, p243)

The VSM is therefore, able to model social systems by demonstrating its structure, communication, knowledge management and the creation of meaning. We can therefore show different aspects of social structures that, together, provide a comprehensive model of organisations and even society, however, these developments also open the door to showing human emotions in the VSM as these can be seen as “signs of human feelings”, and it is only by mapping actual human behaviour and feelings into the VSM that we will achieve a greater understanding of system behaviour.

One further point is highly significant - the recent development of Social Identity Theory maps out the state-space of group behaviour. Previously, psychology had focused on the behaviour of the individual and groups were seen only as a collection of individuals with general human affective attributes such as, anger and jealousy. Now Social Identity Theory gives the states of human individual and group behaviour given the conditions in the environment and this puts it within the reach of cybernetics.

2.18 Using the VSM

While there are many models that we could use to fit Social Identity to, only one model crosses the hard soft paradigm divide effectively and that is Stafford Beer’s Viable Systems Model. This is because the VSM is based on cybernetics and can be described as both a hard and a soft methodology depending on the viewpoint of the observer (Flood and Jackson 1991). Ulrich’s criticism that the VSM allows for the autocratic dictation of purpose demonstrates that the VSM can be used from different viewpoints when modelling social systems and allows us to use the VSM to show a system as purposeful or purposive through the application of its power structures and identity.

We have, therefore, seen how adaptable the VSM is and how robust its construct; it provides an ideal vehicle with the extensions that we have identified, to form a framework for a model of human behaviour.

There is one key parameter that aligns most of these aspects from both the system and social perspectives; that is identity. The identity of the individual sub-systems has to be coherent with the identity of the system as a whole. This is a key requirement of the VSM. Sub-systems have to have sufficient autonomy to be able to function effectively without excessive command and control but at the same time they have to be identifiable as part of the system. They have to have a common binding purpose. This was the issue with Ulrich; the democratic identification of purpose. This purpose has to be common with the social groups within the organisation. The degree that they are aligned with their local system and
that of the organisation should indicate the effectiveness of the groups function. The purpose of the social groups is a function of their identity and once found it provides mechanism to reward strategies, communications, motivation and recognition of conflict.

2.19 Identity – A Link Between Social Identity and the Viable Systems Model

Both Social Identity and the VSM are founded on concepts of identity. This section examines those concepts and compares their compatibility.

Von Foerster provides some clear insight into the problems of ‘identity of self’ with his 2nd Order Cybernetics (1979, 1981, 1984). Drawing on Spencer-Brown’s Laws of Form (1994) von Foerster suggests that every act of observation begins with an act of distinction. The act of distinction is the separation of what can be seen while the act of distinguishing makes a selection within that framework;

“...the act of distinction is the taken as the fundamental act of cognition; it generates realities that are assumed to reside in an external space separated from the person of the distinguisher.”


However, von Foerster is keen to point out that the distinctions that we make are made as observations; the objects that we make distinctions upon remain unaffected by our choice. The act of distinction is internal and reveals more about the properties of the observers than the objects themselves.

Von Foerster goes on to elaborate this point by suggesting that for humans the act of “observing others” is the only way that individuals can understand and define themselves;

“I become aware of myself though the existence of other. Being together, togetherness is what makes for the human condition. Only through reciprocity, through being with one another, two- togetherness, as Buber (1942) always calls it, am I actually born....”

(Von Foerster cited in Bröcker, 2003)

This is almost exactly the approach taken with Self-Categorization Theory and Social Identity; where the social context of our environment causes us to make distinctions, and these very distinctions define us and create who we are.

Von Foerster extends his observations of observation to the concept of identity, how is it, he asks, that we can overcome the paradox of change and identity? If something has changed then logic suggests that it is no longer what it was, its identity has changed, has the thing changed or is it our description of it that has changed?
Beer’s VSM addresses this problem directly by making identity the very soul of his model as does Social Identity Theory, both address the issue of “who we are” and “who we think we are” head on.

While the Theory of Social Identity is embedded in psychology that of viable systems is derived from systems thinking and managerial cybernetics. One provides human nature in a continuum from individual to group, and demonstrates human emotions, while the other provides the mechanisms for system behaviour and survival; both are recursive systems embedded in an environment with an identity derived from purposeful behaviour. In System 5 the VSM creates an ‘ultimate whole system identity’, or ethos, that relates to, and aligns with, the ‘individual identities’ recursively embedded within it. We have seen from Social identity Theory that people readily form identities to create groups and assume the identity of the group. This mechanism has similarities to the one identified in the VSM. What is more they do this more easily than they align values and beliefs, which they find hard to change as these are embedded deep in their self-concept. Identity appears to be a quick and effective way of creating group alliances for any given circumstance along the lines of Hejl’s syn-referentiality (1984).

In both Social Identity Theory and managerial cybernetics identity is a summary of the totality of the system. It is the sum of the variety created by the interconnection of many meanings (Burke, 1991) and the cohesion of many discrete meanings into one coherent and complex meaning (Burke and Tully, 1977). Meanings are made by the systems sense-making and value-making structure (Beer, 1995). An identity is therefore recursive, the elements that make up the system each have a discrete identity themselves and they combine to provide a uniqueness to the total system (Beer, 1995). It therefore depicts the ethos, purpose and entirety of the group of meanings, summarizing what it is and providing closure from the environment. And for that final meaning to have meaning it has to be what makes it distinct from other systems “a difference that makes a difference” (Batson, 1972).

In Social Identity Theory identity is a summary of ‘who we are’, it is a continuum from personal identity “who am I” to prototypicality, i.e. group identity “who are we?” The “I” and the “we” match the recursivity in the VSM, however, when comparisons are made;

“The definition of others and the self are largely "relational and comparative" (Tajfel and Turner, 1985, p. 16); they define oneself relative to individuals in other categories. Identification is viewed as a perceptual cognitive construct that is not necessarily associated with any specific behaviors or affective states. To identify, an individual need not expend effort toward the group's goals; rather, an individual need only perceive him- or herself as
psychologically intertwined with the fate of the group." (Ashforth and Mael, 1989)

So when we map Social Identity to the System Identity of the VSM it is whatever people identify as being the totality, the purpose, of that group that they are identifying with.

There is a temporary use of identity that emerges from Social Identity Theory. We know from the principle of comparative fit that people do not necessarily have to agree with the values of a group to join it, it is just that ‘in that moment’, for whatever reason, self-protection, social status etc… that they find that they have more in common with a particular group than the other groups around them.

Social identification is distinguishable from internalization (Hogg and Turner, 1987) (cf. Kelman, 1961; O’Reilly and Chatman, 1986). Whereas identification refers to self in terms of social categories (I am), internalization refers to the incorporation of values, attitudes, and so forth within the self as guiding principles (I believe). Although certain values and attitudes typically are associated with members of a given social category, acceptance of the category as a definition of self does not necessarily mean acceptance of those values and attitudes. An individual may define herself in terms of the organization she works for, yet she can disagree with the prevailing values, strategy, system of authority, and so on (cf. "young Turks," Mintzberg, 1983, p. 210; "counterculture," (Martin and Siehl, 1983, p. 52).

This last point is important as it hints that there are several levels or types of group membership. With collaborative fit people will join groups with whom they are not align in values and beliefs, either for self-esteem or protection (reduce uncertainty), when the group is no longer salient its value fades. However, this is not case with normative fit where they are aware of the normative behaviours when they join and may internalise these as part of their self-concept.

2.20 Summary of Chapter

We have evaluated how people observe and categorize the social world around them; from both a Social Identity and a Social Cognition perspective and how this leads to the formation of social groups. The Social Identity approach suggests a process of depersonalisation that creates a sense of ‘us’ and encourages group members to engage in identity enhancing behaviours of in-group favouritism and out-group derogation to create positive distinctiveness for their group and improve their self-esteem and self-understanding.
The review also covered the theory of Social Cognition, which overlaps that of Social Identity Theory and Self-Categorization Theory. The review of Social Cognition demonstrated how causal inference between individuals and groups is thought to work and how individuals use schema to make judgements of both individuals and groups. The review then explained the relationship between schema and stereotypes and how these concepts relate to Self-Categorisation Theory. A comparison of Social Cognition and Social Identity Theory was then followed by the latest research relevant to the study.

The literature review then addressed the issues of enduring social structures and examined the application of System Thinking to social groups. It highlighted the limitations of System Thinking and the problems of using it to model human behaviour. The review then scrutinized the problems of representation of complex systems and the generation of viable systems before comparing the three theories of viability. It explained the foundations of the Viable Systems Model and examined its recent developments. The limitations of the VSM at representing social systems were highlighted and discussed before concluding that it provided the means necessary to conduct the research.
“I have the feeling that it is like a round dance, where some dancers reach out to one another and dance around in a circle. And there you can name these dancers; one of them is cybernetics, the other’s name is ethics, the other is cognition, the other I, the other You, Anyone. These are mutually-created perspectives, that mutually support each other, and that by contemplating, thinking, feeling, help us find a leading thread in this incredibly fascinating, almost impenetrable world.” (Heinz von Foerster cited in Bröcker 2003).

3.1 Aim of the Chapter

The aim of this chapter is to identify the research paradigm from the ontologies and epistemologies of Social Identity Theory and the Viable Systems Model. The chapter will then move on to specify the he type of logic used in the approach and the strategy and methodology used to measure the to achieve the required design. The chapter will examine the advantages of quantitative, qualitative and mixed method designs in answering the research question.

3.2 Research Questions

The research was initiated out of a desire to answer the question;

Are social groups with salient identities viable systems?

This very general query was useful in that it provided a research focus as well as ‘situating’ the position of the researcher from the beginning of the study. Robson (2011, kindle-1910) suggests the use of a “working title” to provide focus and a point for “starting where you are” for these very reasons (Lofland Snow and Anderson, 2006). This question, however, does not fit the Blaikie (2007, p 6) standard format which indicates the type of answer required from the research question by using ‘what’, ‘why’ or ‘how’ to preface the question. It is possible to rewrite the research question as ‘what social identities are viable systems?’ or ‘why are social identities viable systems?’; or ‘how are social identities viable systems?’ All these questions, however, presupposes that social groups with salient identities ‘are known to be viable’ which has not yet been established. The first question that needs to be asked is “can they be viable systems?”. So the original question is a good starting point for exploring the subject area as it forces the research to take first things first and establish what ‘viable’ means for salient social systems in the first place?"
Saunders et al (2009) stress the importance of clarity in the research question to ensure that clear conclusions can be achieved with the research. They cite Clough and Nutbrown (2002) who describe the ‘Goldilocks Test’ for a research question; in other words, is it ‘too big’, ‘just right’ or ‘too small’. Too big and it may be beyond the scope and resources of the research, too little and it may not have ‘sufficient substance’. The research question for this study that originated with a wish to understand the viability of social groups with salient identities is certainly of sufficient substance but it also has the potential to be ‘too big’. The research question therefore, needs to be carefully framed to ensure it brings the research into scope.

Shifting the research question from ‘explaining social identity viability’ to ‘exploring social identity viability’ provides a method of reducing the research scope; Robson backs this approach by suggesting that;

“…for much real world research we are in relatively uncharted waters and the most useful thing to concentrate on is to explore. (Robson, 2011, Kindle 1689)

An exploratory study also fits the suggestion made by Robson (2011, Kindle 1691) that “many real world research questions call for an exploratory or descriptive focus”. This fits the original intention to question the ‘viability of social groups with salient identities’.

If we seek to establish a link between social identities and their viability then we should be sure that we know how to establish that groups have salient social identities and secondly, what constitutes viability for a social group. Both issues will require careful research design. We have already defined the meaning of the term viable as “maintenance of identity” and related it specifically to Stafford Beer’s Viable Systems Model and its five key sub-systems. However, simply identifying groups that endure may not be sufficient to ensure that they are either viable or have a salient social identity. We know from Prentice et al (2006) that there are different types of group in addition to those with a salient social identity. Prentice identified common-bond groups as well as common-identity groups, although he suggested that common-bond groups were non-enduring by their very nature. The research questions needs, therefore, to be framed carefully to ensure these two requirements are recognised.

3.2.1 The Primary Research Question

Are social groups with salient social identities viable systems?

3.2.2 Secondary Research Questions

Robson (2011) states the importance of the research question as the ‘centrality’ of any real world research that is based on a pragmatic approach.
“The centrality of research questions for the research process has been the mantra of this text. This view enjoys considerable support in the research community active in multi-strategy social research. It is, in part, accounted for by the pragmatist stance taken by many which regards the research question(s) as the driver for carrying out research. (Robson, 2011)

The study process identified additional questions necessary to support the primary question that relate to the research model. The first of these additional questions queries if it is possible to map the processes we are interested in to the model framework;

- Can we explain the core issues of a social group’s viability by translating the main of psychological activities of Social Identity Theory as components in VSM Theory?

and secondly can we verify that the model achieves what we are asking it to do. In this case represent social identity and viability.

- Can we assess the validity of the model to identify viable groups with salient social identities?

and lastly, does the model provide a measure of social viability that we can use to recognise those groups that are both salient social identities and viable systems;

- Can we identify or assess the viability of social groups with salient identities.

3.3 Research Focus

The subject of groups and human collective social behaviour spans several disciplines from, psychology to sociology, anthropology, business studies and systems thinking. This research will focus in particular on the whether there is a connection between the viability of groups from a cybernetic perspective as determined by Stafford Beer’s Viable Systems Model, and the psychology of human social behaviour, determined by Social Identity Theory and where required Social Cognition.

3.4 The Research Paradigm

While the research question “provides the key to planning and carrying out research” Robson (2011, Kindle 1273) it is, nevertheless, necessary to ensure that the philosophical position of the research is identified, not to ensure that the study is “philosophically informed” but to ensure that the research is “able to reflect upon its philosophical choices and defend them in relation to the alternatives that could have been adopted” (Clark 2006 in Saunders et al, 2009). Saunders et al (2009) emphasises that the research philosophy “contains
important assumptions about the way you view the world" and the “relationship between knowledge and the process by which it is developed”.

Kuhn (1962) saw researchers as working within research paradigms that are “universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners” (Kuhn, 1962, p.viii), he suggests that in practice research tends to follow pre-determined paths that are accepted viewpoints. Burrell and Morgan (1982) demonstrate that these paradigms are a relationship between ontology, epistemology, axiology and data collection techniques. They place them into a grid of four conceptual dimensions with radical change and regulation at opposite ends of one axis and the ontological dimensions of subjectivism and objectivism at opposite ends of the other. This grid generates four basic paradigms which are identified as; radical humanist, radical structuralist, interpretivist and functionalist, which Burrell and Morgan suggest helps researchers “understand their assumptions and plot their way through their research”, see Figure 3.1.

In combining two separate disciplines, in this case Social Identity Theory and the Viable Systems Model, it is important to examine the paradigms normally related to their use and identify how they relate to each other to prevent a dichotomy of interests in the subject matter or research methodology. It is also necessary to examine the purpose of the research and its relationship to these paradigms to place the researcher and audience into the frame of reference. A further comparison with other unrelated paradigms helps highlight the areas of difference and their meaning to the research;

"...by reflecting on one’s favoured research strategy in relation to other strategies, the nature, strengths and limitations of one’s favoured approach becomes much clearer" (Morgan, 1983, p381).
The four different paradigms are defined by the two dimensions to produce very different perspectives;

**Radical humanist** – guided by a subjectivist ontology with a critical perspective. The practical outlook is one that has a high concern for change and a low concern for stability.

**Radical structuralist** – guided by an objectivist ontology with a critical perspective. The practical outlook is one that has a high concern for change and a high concern for stability.

**Interpretivist** – guided by a subjectivist ontology that is regulated by the need for discovering irrationalities. The practical outlook is one that has a low concern for change and also a low concern for stability.

**Functionalist** – guided by an objectivist ontology that is regulated by the need for “rational explanation”. The practical outlook is one that has a low concern for change and a high concern for stability.

Gharajedaghi (1983) identifies these paradigms in the Burrell and Morgan (1982) grid as ‘*modes of behaviour*’ with functionalism relating to conservative behaviour, interpretivism as anarchic, radical humanism as radical and radical structuralism as ideal seeking, see Figure 3.3.
While Kuhn indicated that paradigms were ‘model solutions for practitioners’ (Kuhn, 1962, p.viii), the connections between paradigm, research philosophy, approach, strategy and data collection must be coherent as each layer can influence the next. To examine the complexity of research paradigms Denzin and Lincoln (2003) provide an interconnected net starting with the research paradigm and then the ontology, epistemology, approach and data collection, while Saunders et al (2009, p108) provide a framework demonstrating the layers from research philosophy to data collection, see Figure 3.3.

The research has, therefore, to determine from an examination of the ontology, epistemology and normal research approaches as well as any considerations of previous researchers the paradigms of Social Identity Theory and the Viable Systems Model.

### 3.5 The Paradigms of Social Identity Theory and the Viable Systems Model

Starting then with the research philosophy we need to identify the ontology and epistemology of our subject. Psychology research is traditionally rooted in logical positivism and empiricism derived from the work of the Vienna Circle of philosophers and dominated, in the early years, by the Behaviourists (Skinner 1957) who were advocates of realism and quantitative research. To some degree this tradition is continued within social psychology research, which focuses on individual perception and understanding and tends to be biased towards quantitative methodologies.
Social Identity Theory, however, is more rooted in a constructivist and symbolic interactionism philosophies (Ashforth and Mael 1989) and aspects of its research have been directed towards more qualitative methods to determine the meaning behind individual processes. Yolles (2004) places social constructivism theories, such as Social Identity Theory, within the domain of 'bounded relativism'; with ontologies of "social relativism where reality is socially constructed."

So what of the ontology and epistemology of the VSM? Beer’s Viable Systems Model was categorized as ‘functionalist’ by the Operational Research community when it was first introduced. Jackson (1988) identifies that this was based on a lack of understanding of the nature of the VSM; with the OR community trying to represent it as a simple causal model with a set of causal relationships to be applied in a prescribed manner. Jackson maintains that this was a fundamental error; the basis for the misrepresentation was that the model is difficult to understand, partly because it is based around the concept of variety, but also because its ontology is complex.

Jackson (1988) explains that the VSM is based on structuralist ideas that come from Beer’s development of organisational cybernetics. Beer’s shift in ontology, from a positivist viewpoint of the era, to a more structuralist and constructivist approach was difficult for many to grasp. The structuralist approach enables the VSM to demonstrate surface phenomena that are underpinned by deeper constructs; so while it can show much of the positivist findings in management science it can, at the same time, show the core elements of a system and its meaning.
Yolles (2004) identifies the ontology of the VSM as a “constructivist approach with bounded relativism”. More specifically the ontology is “personal and social relativism” where reality is “local and cognitively demiurgic; being shaped by socially related factors.” Golinelli et al (2010) suggest that the VSM is a ‘grounded theory’; that is a theory that is systematically discovered through the analysis of data, because it;

"...suggests a new interpretation both of corporate behaviour and relative interaction with the context (Beer, 1972) and consolidated strategic organizational managerial corporate models (Golinelli et al, 2003, p3). In other words it facilitates the analysis of the internal components (sub-systems) of a firm as well as the analysis of relationships between firms and the other influential systems entities of its context (supra-systems) (Golinelli, 2000; Barile 2008)." (Golinelli et al, 2010)

It is easy to see how the system can be seen from all these perspectives. With the interaction of its elements the VSM appears constructivist yet the stable, viable structures that emerge from its epistemology can also be seen from a structuralist, ‘grounded theory’ or even functionalist perspective; hence Flood and Jackson (1991) statement that the “VSM crosses the hard, soft paradigms depending on the viewpoint of the observer”.

Essentially, at its basic systems level, the ontology of the VSM is what it represents, a social system, organism, organisation etc… however, the inclusion of the meta-system means that any representation has to encompass the higher order domains that represent the rational, logical and belief systems. The VSM is therefore, in Schwarz’s Meta-Model, a system that is designed to represent self-reflective systems. There is therefore, no single ontology that defines the cybernetic paradigm. Beer’s system and meta-system have two different ontologies, when defined within a system this creates an ontological dichotomy as to the nature of the system itself, similar to cartesian dualism (Descartes 1641).

Koestler (1967) provides one way out of this dilemma through the use of ‘holons”; where the entity is treated as a totality, however, an alternative is to use the “Three Domains Model” of Schwarz (1997). This problem is explored by Yolles (2004, 2006a, p54) who defines the ontologies as being “ontologically coupled” with a connection through their boundaries; labelled as a transverse ontology. Yolles identified the conditions for this to happen (Yolles 2006a: p297-301). Essentially, the complex nature of the VSM divides the attributes, identified by Beer, across phenomenal, noumenal and existential domains with autogenesis and autopoesis mechanisms making couplings by “melding “ their ontological horizons, see Figure 2.5 in the previous chapter.

Smolensky (1987) details the possible solutions to the conflict between symbolism, which he calls the ‘hard’ and connectionism which he calls the ‘soft’. The last of these solutions is to;
"..make a system which is ‘soft’ at bottom complex enough that hardness will sometimes appear when viewed at a higher level.” (Smolensky, 1987, p137)

Cilliers (1998) comments on this solution by saying;

“...I find the last suggestion most intriguing. It postulates a system that does not function on the basis of rules, but where certain systematic properties can be described by means of rules if they prove to be useful.” (Cilliers, 1998, p34)

This is very similar to the dilemma of finding a paradigm for the VSM. The homeostatic connections between all the elements of the VSM that are ‘chattering away’ to each other trying to find stability are identical to the connectionists ‘distributed representation’ of neural nets. This is constructivism in action. It describes a system of locally constructed realities, relevant to themselves, comparing and contrasting in a web of complex relationships to find shared meaning, as described by Heylighen and Joslyn (2001);

“...von Foerster and Maturana note, in the nervous system there is no a priori distinction between a perception and a hallucination: both are merely patterns of neural activation. An extreme interpretation of this view might lead to solipsism, or the inability to distinguish self-generated ideas (dreams, imagination) from perceptions induced by the external environment. This danger of complete relativism, in which any model is considered to be as good as any other, can be avoided by the requirements for coherence and invariance. First, although no observation can prove the truth of a model, different observations and models can mutually confirm or support each other, thus increasing their joint reliability. Thus, the more coherent a piece of knowledge is with all other available information, the more reliable it is. Second, precepts appear more "real" as they vary less between observations. For example, an object can be defined as that aspect of a perception that remains invariant when the point of view of the observer is changed. In the formulation of von Foerster, an object is an eigenstate of a cognitive transformation. There is moreover invariance over observers: if different observers agree about a percept or concept, then this phenomenon may be considered "real" by consensus. This process of reaching consensus over shared concepts has been called "the social construction of reality". Gordon Pask's Conversation Theory provides a sophisticated formal model of
such a "conversational" interaction that ends in an agreement over shared meanings. Another implication of constructivism is that since all models are constructed by some observer, this observer must be included in the model for it to be complete. This applies in particular to those cases where the process of model-building affects the phenomenon being modelled. (Heylighen and Joslyn, 2001, p23)

von Foerster, Maturana and Smolensky’s view that the complexity of a ‘soft’ complex system can sometimes be viewed by a set of ‘hard’ rules shows how a VSM system can be seen as both ‘soft’ and ‘hard’ in itself. At one end a complex of interconnected constructivist and connectionist relationships and at a higher level a functionalist view of the same system’s emergent, invariant properties as a stable system with defined rules and behaviours. This has similarities with Heidegger who describes the essence of a phenomenon as “the way in which it remains through time as what it is” (1977, p3) and uses this to build hermeneutic phenomenology. Time, however, is an important aspect in this perspective. A complex systems changing and adapting to its environment every millisecond may seem like a stable entity to a being that lives only for a nanosecond.

So what of its epistemology? The System Thinking paradigms created by Luhmann, Beer, Schwartz and Yolles are based on complex ontological frameworks joined through transverse structural couples of autopoietic and autogenetic mechanisms (Yolles 2004). These paradigms do not provide a positivistic ‘absolute’ framework of reality but instead, should be viewed as an epistemological mechanism for understanding the complex interaction of social systems as a complex process of connected processes and meanings. We are essentially talking about ‘socially constructed meaning’ but more importantly we have placed over that a mantle of ‘viability’ and we have seen, from Yolles that the VSM is the means by which we can understand viability, in his words “it is its own epistemology” (Yolles 2004).

3.6 Pragmatism – Bringing the Paradigms Together

This places Social Identity and the Viable Systems Model in different paradigms, however, as we have argued the structuralist nature of the VSM, built on constructivist principles aligns part of the mechanisms the research is studying. A more complete solution, however, is to extend or move Social Identity Theory from the constructivism paradigm to the structuralist one. However, here we meet the same arguments that surrounded quantitative and qualitative data incompatibility (mixed methods research);

“…different philosophic perspectives are distinct and incommensurable”, (Guba and Lincoln, 1994 in Yolles, 2004, p85)
Cupchik (2001) and Kuhn (1962) raised the issue that,

“by allowing philosophic perspectives to be incommensurable, processes of inquiry (e.g., methodologies) must similarly be seen as incommensurable” (Yolles, 2004, p85)

Cupchik demonstrated how apparently incommensurable qualitative and quantitative methods, can be used together through constructive realism and this same logic can be applied to the movement of the Social Identity paradigm. Howe (1988) also argues for mixed methods. He suggests that instead of being incommensurable ‘there are important senses in which quantitative and qualitative methods are inseparable’ This approach has been extensively argued by Creswell (2003), Tashakkori and Teddlie (2003) and forms the basis of pragmatism as a philosophical underpinning for research (Denscombe, 2008).

Pragmatism fits the research requirements well as it provides a good representation of the functioning of the VSM and recognises the pluralism of the research paradigms particularly; it rejects traditional dualisms in favour of more practical solutions that provide answers and solve problems, it recognises the real world as well as the emergent social and psychological worlds and accepts that knowledge is both constructed and experienced. Pragmatism also recognises the value of human enquiry and generally rejects reductionism (Johnson and Onwuegbuzie, 2004, p. 18)

Pragmatism can be seen as providing a licence to carry out multi-strategy research, safe in the knowledge that a body of leading researchers in the field have followed this path. For Onwuegbuzie and Leech (2005) what they term ‘pragmatic researchers’ are simply those who learn to utilize and to appreciate both quantitative and qualitative research. From this they consider that several advantages flow, including: researchers can be flexible in their investigative techniques; a wide range of research questions can be addressed; they are more likely to promote collaboration among researchers (including those of different philosophical orientations); they are more likely to view research as a ‘holistic endeavour’; and as they have a positive attitude to both qualitative and quantitative approaches, they are likely to favour using qualitative techniques to inform the quantitative aspect of a study and vice versa (p. 383). (Robson,2011,Kindle 5644)

3.7 Creating a Dialectic Argument for Change

Aligning two paradigms raises the prospect of either a dichotomy or a dialectic argument. Gharajedaghi (1983) addresses this issue, particularly on how a dichotomy can be
transformed into a *dialectic* argument that can be *dissolved* (from Ackoff, 1981) and ultimately lead to development and progress. Gharajedaghi starts by demonstrating visually the two arguments as either opposing forces (OR) *dichotomies* or as orthogonal forces (AND) *dialectics*, see Figure 3.4.

*Figure 3.4 – Dichotomy (OR) and Dialectic (AND) – From Gharajedaghi (1983)*

Gharajedaghi states that the development of social systems is “a three dimensional phenomenon of *purposeful transformation* in the direction of increased *integration* and *differentiation*” (purpose is the third dimension but is not shown). This is demonstrated in Figure 3.5 and defined as:

“This *Differentiation* represents artistic orientation with emphasis on intrinsic (stylistic) value systems, signifying tendencies towards such things as: increased complexity, increased variety, increased individual autonomy (individual choice), and *morphogenesis* (creation of new structure).

*Integration* represents a scientific orientation with emphasis on extrinsic (instrumental) value system, signifying tendencies toward such things as: increased order, increased uniformity and conformity, increased collectivity (collective choice), and *morphostasis* (maintenance of structure)” (Gharajedaghi, 1983)

Gharajedaghi places *differentiation* and *integration* over the Burrell and Morgan (1982) grid, see Figure 3.5, to show that given the right arguments the integration of Social Identity Theory with the Viable Systems Model can create *innovation*, *organisation*, *socialization*, *participation* and *adaptation*, however, it involves moving Social Identity Theory from chaotic *simplicity* to organized *complexity* with a *dialectic* argument. From Ackoff’s (1972) concept of *purposeful systems* Gharajedaghi suggests that there are two strategies for a *dialectic*
argument both of which have a compatibility of ENDS but differ in the compatibility of MEANS, these are; cooperation, which is a compatibility of MEANS or competition which is an incompatibility of MEANS.

“a dialectic is a conflict in tendencies that share a higher-level objective. It is a conflict of means, not ends. A dichotomy is a conflict in ends and means, a zero-sum game and a win/lose struggle”. (Gharajedaghi, 1983)

Figure 3.5 – Differentiation and Integration- from Gharajedaghi (1983)
3.8 The Research Approach and Strategy – Analysis and Synthesis Inherent in the VSM

In the process of establishing the paradigmatic position of the research we identified that the research philosophy would have to be pragmatic to fit the complex paradigms of the two principle theories. We also recognised the need for a holistic approach that brings all the elements together in synthesis (Chapter 2 Section 2.9). The key question is – does the VSM provide these facilities?

Barton and Haslett (2007) provide a systems analysis of the scientific method that incorporates analysis and synthesis and the use of inductive, deductive and abductive reasoning. They state;

“The scientific method is most usefully interpreted as a dialectic between analysis and synthesis supported by the triadic logic of C.S. Peirce, and that the role of systems thinking is to frame this dialectic.” (Barton and Haslett, 2007)

They demonstrate how a ‘surprising fact’ leads to synthesis of the known elements using abductive reasoning to generate a new hypothesis. This then leads to “action and analysis” using deduction and induction to generate new data and the creation of new categories. As new details emerge from these categories a new ‘surprising fact’ is discovered and the process starts again. Over time this dialectic process leads to new categories emerging with “increased powers of explanation and understanding”. Figure 3.7 shows the process in diagrammatical form.
All three of these processes are inherent in the construct of the VSM. We have seen how the viewpoint of the observer means that the VSM can be employed across a wide spectrum of paradigms, namely: functionalism, structuralism, grounded theory or interpretivism since the VSM is its own epistemology (Yolles, 2004). In choosing the VSM as the foundation of the model we automatically select it as the research approach. Further we have seen that the VSM brings with it the ability to synthesise its internal components and from Golinelli et al (2003) the ability to “facilitate the analysis of relationships between [...] elements of its context”. These enable deductive and inductive reasoning, however, the definition of the VSM by Golinelli et al (2010) as grounded theory expresses its capability for abduction. Abduction is defined by Peirce (1902) as a position “whereby the reasoning acts to infer a conclusion that fits the best explanation”.

Figure 3.7 – Synthesis, Abductive Reasoning, Analysis and Deductive and Inductive Reasoning – from Barton and Haslett (2007)

3.9 Explicit and Implicit Purposes

Stafford Beer stated “to know something properly, you must measure it.” (Beer, 1979, p270). He identifies three key measures of the output of any viable system; firstly its ‘actual output’, secondly its ‘capability’ and lastly its full ‘potential’ (Beer, 1979, p293). In the case of social groups these measures would directly relate to the explicit purpose of the groups being studied. We would normally identify a group with a specific explicit purpose as to ‘make this’, or to ‘sell that’, or even to ‘reassure each other’. However, as we have seen from Social
Identity Theory the main reasons people join groups is to boost self-esteem and to reduce uncertainty. These are the implicit purposes.

Put simply people can’t ‘do’ self-esteem, it is an emergent property of social activity.

Just as self-esteem is an implicit measure of an individual’s function so stability and cohesion are implicit measures of a system’s viability. Looking at these implicit measures Beer explains that they ‘set the criteria of stability’, ‘detect instability’ and ‘change the criteria’. He states;

“The manager’s requirement of ‘measurement’ is that it should measure stability and instability in the system that he (this being his role) has subjectively defined.”  (Beer, 1979, p 287)

To Beer a system was either viable or it was not. If it could not achieve internal stability it was not viable it would ultimately fail;

“complicated systems fail because they are potentially unstable. (Beer, 1979, p 290)

and to Beer viability was directly connected to the stability of the system and its ability to balance variety;

“The stability of the systems, in which we are acutely interested, derives from the ability of its subsystems to absorb one another’s variety. To this extent, control is intrinsic to the system; it derives from the automatic operation of Ashby’s Law, and is not embodied in a controller. However, the criteria to which the system answers, in terms of its degree of stability, derive from the criteria of systemic viability in the context of the total viable system - and in particular they derive from the understanding of cohesion, in which freedom and constraint are balanced to provide a workable level of autonomy.” (Beer, 1979, p289)

Is this the case with our social groups? Does failure of a group to create all of the key subsystems leave it vulnerable? The key dependent variable in the research is that of viability which has ultimately to be ‘quantified’ in some way for the methodology of the research. We have seen from the above that it is related to the stability of the system as a whole and its ability to maintain balance and absorb variety. Therefore, viability is measured by the effective functioning of the VSM and the criteria for measurement of viability is to assess the level of social groups internal processes. An additional measure that must also be examined is System 5 closure (Beer 1979, 289) which should be related to the internal stability.
This provides two means of assessing the viability of a system, firstly the effective stability of its intrinsic internal processes and secondly from its organisational closure with the environment.

3.10 Research Methodology – Mixed Methods

Returning to the measurement of data in complex systems, the literature review at Section 2.12 identified that it was feasible to take a ‘snapshot’ of a complex system to determine, “the construction of some kind of interpretation of the nature of the systems at a given moment.” (Cilliers, 1998, p80). This provides the research with a basis for its methodology to measure the viability of social groups, namely;

To use a pragmatic approach to determine the viability of social groups with salient identities by taking a ‘snapshot’ of the values of their internal components to assess the stability of their key processes and to verify this with a comparison of their viability determined from an assessment of the groups’ organisational closure.

The key question then becomes - what are these internal components and key processes? For this we need to translate the main psychological activities of Social Identity Theory to defined points in VSM Theory that can be measured. Maturana and Varela identify components as the principle elements of a network of processes of production;

An autopoietic system is organized (defined as a unity) as a network of processes of production (transformation and destruction) of components that produces the components that: (1) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produce them; and (2) constitute it (the machine) as a concrete unity in the space in which they exist by specifying the topological domain of its realization as such a network. (Varela, 1979, p. 13; see also Maturana and Varela, 1980).

Therefore, by creating a set of components, as independent variables, a ‘snapshot’ of the social groups can be taken to assess the degree of viability.

A key question at this point is whether or not the main psychological activities that are translated from Social Identity Theory to VSM theory as components will retain their significance and relationships once translated. The mapping of a process from one theory to the other may not address issues of interactions between the elements at both levels.
The answer to this question reflects on the very basis of cybernetics. The original concept of systems thinking and cybernetics, upon which the VSM is based, was as a meta-science, that is a science of sciences. By its very construct cybernetics examines the ‘states of systems’ and the relationships between these states, that is the trajectory of the system. This should mean that any science or theory where the states have been determined can be examined by cybernetics. As stated earlier at 1.11, this work is only possible now because psychologists have essential ‘mapped the state-space’ of individual and group cognition, opening the door to cybernetic principles. This should mean that translating the psychological activities of Social Identity Theory to VSM Theory is only possible as long as the research identifies the ‘states’ of these psychological activities to make the mapping as components in VSM Theory possible.

Nevertheless, despite the apparent validity of VSM Theory for this application it is important to verify that the translations of components achieve accurate mapping from one theory to the other. There is no easy methodology to achieve this except for a practical assessment of the comparison of the results. The representation of each social group modelled by the VSM can be compared to other groups to confirm that the differences and the ‘differences between differences’ from the originals. A comparison of groups is therefore essential and for this a qualitative assessment of each original social group is necessary as a baseline.

So while the components can be measured from quantitative measures, qualitative data will be necessary to confirm the ‘meaning’ or triangulate within the systems being measured and to confirm the validity of the model. This is a mixed model approach (Saunders et al, p152) as it requires taking quantitative data and ‘qualitising’ it – i.e. converting it in to a narrative during the synthesis of the components into their processes. Saunders et al (quoting Tashakkori and Teddlie (2002) suggest that mixed methods and mixed models “provide better opportunities to answer research questions”, however, they also suggest it may lead to unexpected outcomes (p154). Robson (2011, Kindle 5451) refers to this as a multi-strategy sequential explanatory design which is defined by the; collection and analysis of quantitative data followed by the collection and analysis of qualitative data and where the two methods are analysed together so that the qualitative data can help to interpret the quantitative data.

Robson (2011, Kindle 5497) (based, in part, on Bryman, 2006a) identifies the advantages of multi-strategy designs as achieving;

“**Triangulation.** Corroboration between quantitative and qualitative data enhances the validity of findings.

**Completeness.** Combining research approaches produces a more complete and comprehensive picture of the topic of the research.
**Offsetting** weaknesses and providing stronger inferences. Using these designs can help to neutralize the limitations of each approach while building on their strengths, leading to stronger inferences.

**Answering different research questions.** Multi-strategy designs can address a wider range of research questions than is feasible with single method fixed or flexible designs.

**Ability to deal with complex phenomena and situations.** A combination of research approaches is particularly valuable in real world settings because of the complex nature of the phenomena and the range of perspectives that are required to understand them.

**Explaining findings.** One research approach can be used to explain the data generated from a study using a different approach (e.g. findings from a quantitative survey can be followed up and explained by conducting interviews with a sample of those surveyed to gain an understanding of the findings obtained). This can be particularly useful when unanticipated or unusual findings emerge.

**Illustration of data.** Qualitative data can illustrate quantitative findings and help paint a better picture of the phenomenon under investigation. Bryman (2006a) refers to this as putting ‘meat on the bones’ of dry quantitative data.

**Refining research questions** (hypothesis development and testing). A qualitative phase of a study may be undertaken to refine research questions, or develop hypotheses to be tested in a follow-up quantitative phase.” Robson (2011, Kindle 5497) (based, in part, on Bryman, 2006a)

### 3.11 Fixed Design or Flexible

Whether the research is a fixed design or flexible is also a matter that needs to be determined at an early stage. Fixed designs are usually used in social study research when examining “group properties and general tendencies” that report such properties as the “group averages” (Robson, 2011, Kindle 2947). Fixed designs can, therefore, ‘transcend’ individual differences and “identify patterns and processes which can be linked to social structures and group or organisational features”, (Kindle 2978), however, it is also difficult to
assesses the behaviour of individuals from a fixed design. Flexible designs on the other hand, are useful for case studies and grounded theory research where there is a good possibility of evolving parameters and the researchers themselves are a part of the study. They require high skill levels in the researchers who have to be able to identify emerging issues in the study.

The fixed design methodology, therefore, is more aligned with the parameters of the research study. Within fixed design styles the non-experimental fixed design is used when it is not possible to manipulate the variables. Robson (2011, Kindle 4223) states that they are usually used with surveys in social studies and are well suited to understanding social phenomenon.

3.12 Summary of Chapter

The chapter examined the paradigms of Social Identity Theory and the Viable Systems Model and recognised their different constructs. The issue of moving Social Identity from a constructivist to a structuralist paradigm was studied and considered feasible under a pragmatist philosophy and dialectic argument. The flexible construct of the VSM was also discussed and its radical ontology and epistemology considered to be of benefit to the research. The chapter then examined the significance of the pragmatic philosophy to the study and its principle advantages before examining an approach using abstraction and synthesis. The means by which viability could be measured then led to the identification of the research methodology using a multi-strategy sequential explanatory fixed design.
CHAPTER 4 – RESEARCH MODEL

“The amazing thing that needs to be investigated is cultural stability, whenever and wherever it is found.” Douglas (1985: xxii)

4.1 Aim of the Chapter

The aim of this chapter is to take the first steps in relating the theory to the research. The process will be completed in the following chapter with the detail of the research methodology. This section starts by identifying the main psychological activities of Social Identity Theory. This information is used to construct an influence diagram to establish the relationships between these activities. VSM theory is then used as a meta-language to classify the key aspects of Social Identity Theory. The section then conducts an overview of the function of each VSM sub-system to add components as necessary for the functioning of the VSM systems. The chapter then completes by identifying the relationship between these components as key processes. The components and key processes can then provide a value that can be quantified for the research.

4.2 Theoretical Underpinnings - Translating Social Identity to the VSM

The literature review, and examination of the research approach, established that the research needed firstly, to translate the main psychological activities of Social Identity Theory into components and key processes in VSM Theory and then to conduct the research by taking a ‘snapshot’ of groups at an instant in time through the measurement of the value of these components and key processes.

4.3 The Psychological Activities – Creating An Influence Diagram of SIT

4.3.1 Self-Categorization

As shown in the Literature Review in Chapter 2 Social Identity Theory posits that for a specific social context individuals, through the principle of meta-contrast, construct group categories through the comparative fit of intra and inter differences of individuals around them with a subjective relative reference to themselves. Individuals, therefore, identify with groups that they self-categorize with, providing that the groups also meet the perceiver’s expectations of normative behaviour in line with their knowledge of the group prototype. Figure 4.1 shows the processes of comparative and normative fit. Comparative fit is related to the meta-contrast ratio of the social context and other identifiable social categories, while normative fit is related to the perceivers expectations of the normative behaviour of these categories. The identity itself is governed by the principle of functional antagonism, that is
only one identity can be salient at a time and this is related to the social context often in relation to the level of threat from out-groups.

Figure 4.1 – Self-categorization processes of comparative and normative fit.

4.3.2 Distinctiveness and Identity Enhancing Behaviours

Once individuals associate with a group they become representations of the group prototype, adopting group attitudes, behaviours and norms through a process of depersonalisation and they seek to enhance their own group distinctiveness using in-group favouritism and out-group derogation to obtain the maximum possible social value by maximising their self-esteem and reducing their uncertainty by making themselves secure. They also seek to establish their own unique place in the group to maintain a sense of self-value in line with the theory of optimal distinctiveness and achieve self-understanding of themselves through their group memberships.

Figure 4.2 shows the operation of positive distinctiveness which is connected from salient social identity (see previous Figure 4.1) directly to depersonalisation through the processes
of group enhancement (amplification of group identity) and group uniqueness (attenuation of group identity). These two processes are influenced by; the degree of anonymity (only if a low status out-group), the degree of optimal distinctiveness, the level of entitativity and the prestige of the group. Each of these effects is itself influenced by the social environment and the sum of their impact will affect the level of depersonalisation achieved. The process will then generate identity enhancing behaviours of in-group favouritism or out-group derogation to either enhance or define the group identity. The regulator of the process will be the level of social value that is derived from these activities. Social value is a measure of the motivation from ‘survive to thrive’ and is a combination of self-esteem, self-understanding (uncertainty reduction) and self-value (measure of optimal distinctiveness).

Figure 4.2 – Positive Distinctiveness
4.3.3 Depersonalisation and Prototypicality

The prototypicality of the group will be a combination of the image, attitudes, values and attributes that the group have assigned to their concept of group membership. Under strong salience or regular association, the individuals of the group may internalize these as their own values. Figure 4.3 shows the process from prototypicality to beliefs and the feedback to the self-categorization process to make the whole process self-reflective.

Figure 4.3 – Prototypicality

4.3.4 Social Mobility, Social Conflict and Social Creativity.

Should group members not achieve a requisite level of self-esteem they may seek social mobility, that is to move from the group to another with higher status and greater prestige or within the group to a more elite sub-group. Alternatively they may internalise their sense of low status, or seek to re-categorise themselves through social creativity on a different dimension where they can be more certain of achieving greater prestige, or lastly they may engage in social conflict challenging the group hierarchy, depending on the level of control in the group and the legitimacy of its management. These processes are shown in Figure 4.3, where low self-esteem can be seen connected to a high status in-group that is legitimate or a high status group that is seen as illegitimate. The former leads to social creativity and feeds back to the self-categorisation process, while the latter is connected to internalisation of low status. Figure 4.4 shows the process from self-categorization to prototypicality.
Figure 4.4 – Influence diagram of Social Identity Processes
4.4 Diagnosing the System

There are several texts that demonstrate the use of the VSM and its practical application. Beer (1985) in “Diagnosing the System” demonstrates a methodology for examining a system for organisations. Espejo et al (1999) discuss a software learning package called ‘VIPLAN’ that teaches a methodology to apply the VSM as a diagnostic tool to corporations. Both methodologies suggest a similar approach although neither method is ideally suited for social systems. The VIPLAN method suggest the following process which will be used as a broad guide:

- Establish identity.
- Model structural activities.
- Unfold the complexity of the system by modelling structural levels.
- Model ‘distribution of discretion’ - autonomy.
- Model the structure through the study, diagnosis and design of regulatory mechanisms (adaptation and cohesion)” Espejo et al (1999)

Espejo breaks down these processes into finer detail. The requirement to establish identity is defined in terms of what transformations are being undertaken and which processes control or utilize the output from the transformations. A key part of this process is the ‘structural modelling’ which identifies the function and purpose of the individual sub-systems within the framework of the system’s overall purpose. These elements must demonstrate requisite variety, cohesion and coherence.

Structural modelling should bring out the complexity of the system, so the next stage is to “unfold this complexity”, that is, to determine how the activities of the system are recursively structured to deliver the transformations. Often this recursive structuring will be evident from the “natural self-organising processes” of the system. In undertaking this processes the degree of autonomy of the sub-systems; known as the “distribution of discretion” needs to be determined. Too much autonomy and the system will lack a central focus, too little and the sub-systems will fail to be responsive to local effects.

The ‘unfolding of complexity’ is the central process that determines how the system will provide requisite variety; however, this cannot be a rigid structure as to ensure the survival of the system two key-processes cohesion and adaptation must be allowed to act on the system to absorb influences both from within the system and the environment;

Cohesion is the ‘bringing together’ of all the key activities into a single, purposeful entity. It can be seen as a balance between the cooperation, coordination and competition of the
supporting sub-systems in an effort that best supports the whole enterprise. It involves the allocation of resources, the alert of failure and the coordination of the systems. These processes are also embedded recursively within each sub-system.

Lastly, the mechanisms that allow the system to adapt must be identified. This can be minor on-going processes that deal seamlessly with perpetuations within the system or they can be a more dramatic planned change that is able to deal with fundamental threats to the system from the environment. It is also the centre of innovation and the development of new concepts.

All of these processes must be brought together within a central identity and ethos which requires the identity of the key elements of the meta-system, namely coherence, planning and identity to be determined.

4.5 Establish Identity and Purpose

We saw in Section 2.19 that the identity of a social group is defined by its prototypicality, which is the summation of its image, values, attributes and beliefs along whatever dimensions are important to the group. Section 3.9 established that a group’s specific activity defined its explicit purpose while its implicit purpose is the improvement of social value. Beer (1985, p 98) states that;

“…we have not spoken of the system’s purposes before, except in declaring its viability - and therefore the implied purpose TO SURVIVE;” (Beer , 1985, p98)

In his keynote address to a lecture on power, autonomy and utopia (1986) Stafford Beer quotes Canetti (1972); “power is the will to survive”. The implicit purpose of social systems to maintain and preserve self-esteem and reduce uncertainty is a function of self-preservation (on a continuum of survive through to thrive), in other words exactly as Beer states; TO SURVIVE. Recalling “The Purpose of A System Is What It Does” (POSIWID) Beer (1985, p 99);

“On the most fundamental level, the goal of an autonomous or autopoietic system is survival, that is, maintenance of its essential organization. This goal has been built into all living systems by natural selection: those that were not focused on survival have simply been eliminated. In addition to this primary goal, the system will have various subsidiary goals, such as keeping warm or finding food, that indirectly contribute to its survival.” (Heylighen and Joslyn, 2001, p12)
4.6 Establish the System in Focus

Stafford Beer maintained that to examine a complex system we must first establish the system in focus (1985, p 6). In other word we must be clear what system we are looking at since in any complex structure there may well be several multiple overlapping systems and a multitude of complex relationships. This is our ‘snapshot’ of the system (see Section 2.12).

For this research we will examine the viability of social groups with salient identities from individuals to group in two recursions of the VSM only.

4.7 Unfolding Complexity

To unfold complexity the breakdown of the social and cognitive processes involved in Social Identity Theory must be understood. First, however, it is useful to understand the full picture and the levels of recursion by mapping the state-space. Figure 4.5 shows a proposed state-space diagram of social interaction with three levels of recursion.

Figure 4.5 – State-space of Social Interactions and Norms

<table>
<thead>
<tr>
<th>Paradigm or Normative area</th>
<th>Collective</th>
<th>Intimate</th>
<th>Close</th>
<th>Social</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose Explicit Purpose Implicit</td>
<td>Existence</td>
<td>Support</td>
<td>Stability</td>
<td>Goals</td>
<td></td>
</tr>
<tr>
<td>Purpose Implicit</td>
<td>Self Esteem Uncertainty reduction</td>
<td>Self Esteem Uncertainty reduction</td>
<td>Self Esteem Uncertainty reduction</td>
<td>Self Esteem Uncertainty reduction</td>
<td></td>
</tr>
<tr>
<td>Society</td>
<td>Community Social Events Theatre shows Parades</td>
<td>Religion Charity</td>
<td>Social Institutions Government Education Law Health Media</td>
<td>National aims GDP</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>Family</td>
<td>Friends Play Sport Social groups Church groups Close work groups</td>
<td>Acquaintances Communities of practice Learning Clubs</td>
<td>Work group Peers Business gatherings Meetings Briefings Colleagues</td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>Love and Courtship Nurturing</td>
<td>Friends</td>
<td>Mentor Teacher Acquaintance</td>
<td>Role Peer to peer Boss to subordinate</td>
<td></td>
</tr>
</tbody>
</table>

Firstly, at the top we have society, in the middle, group behaviour and at the bottom personal relationships. For each level of recursion the diagram shows four sets of normative
behaviours or paradigms, that are readily recognised; intimate, close, social and business and then identifies the collectives where these may be found. The analysis for the research is being conducted with groups. That is at the mid-level of recursion and across the range of normative behaviours. Social Identity Theory should be effective in all these collectives, although, there is evidence that in family groups, special relationships exist that cannot be explained in the Social Identity framework; such as those defined by Self-Evaluation Maintenance Theory (Tesser, 1988).

Moving in closer to our subject area Figure 4.6 shows the state-space diagram (Friedland, 2005) for the psychological activities of Social Identity Theory that were depicted in the influence diagram at Figure 4.4.

Figure 4.6 – State-space diagram of Social Identity Theory

The state-space diagram shows the different psychological activities of Social Identity Theory mapped out as ‘states’ of its system; a social group. The group can be considered in a particular ‘state’ if the activity is evident in the group. The activities are sub-sets of previous states, in other words as the trajectory path moves through the system each activity
is added to the state of the group. Identity acts as the attractor because it is the final state of closure of the group.

Starting on the outside of the diagram the state-space vector path or trajectory of states (red arrow) moves inward through successive activities that enhance and change the state of the group. These activities in order of development of the group are self-categorization comparative fit, self-categorisation normative fit, distinctiveness, group uniqueness followed by distinctiveness group enhancement, then through in-group favouritism and out-group derogation, depersonalisation and prototypicality, to group coherence and shared group attitudes and beliefs (internalization). Ultimately it arrives at the attractor (the ultimate state) identity, which contains entitativity and ethos. Autopoiesis (yellow dotted circle) is shown to start at depersonalisation while autogenesis, recursivity and closure only at the final stage of identity.

The state space diagram is offset to allow either slow or rapid development (blue arrow) from self-categorization to identity. It is also feasible that the trajectory could be reversed, starting with identity and working outwards. For this to occur the group would have to start with an ‘instant common identity’, such as can occur with an out-group that is suddenly being discriminated against. In this case self-categorization on the outside would be the attractor as it would be the final state.

Social creativity and social conflict are shown as a separate attractor which is limited within the lower levels of activity because these two transformations disrupt autopoiesis and the development of the group.

4.8 Identifying Transformations

During the construct of the model below the psychological activities of Social Identity Theory that need to be translated to the VSM will be designated as components and labelled within [square brackets], each VSM component will then represent a value of the activity found in the social groups so that they can be quantified in the research.

As the focus of the research is with Social Identity Theory wherever possible the concepts from that discipline will be used. So while Social Cognition provides a more comprehensive model of human social behaviour at an individual level, nevertheless, the allegiance to Social Identity Theory is maintained for the research, see Section 2.3 and 2.4 for details.

The first task is to identify which of the psychological activities of Social Identity Theory are the ‘processes of production’ that ‘create themselves’ through ‘meaningful relationships’. These processes or transformations must be autonomous, in that they should be capable of independent existence. For a psychological activity this means that they should be recognised as a complete processes within themselves.
In translating the influence diagram, created at Fig 4.4, to the Viable System Model the first step is, therefore to identify which psychological activities of Social Identity Theory conduct transformations with the social environment. These transformations should be homeostatic loops that maintain requisite variety by balancing between attenuating the complexity of the environment and amplifying the behaviour of the system into the environment. Espejo (1999) also provides and alternative view of a transformation as a ‘learning loop’. This learning refers to the basic operation of adjusting the weighting of a homeostat as discussed by Ashby (1956) - see Figure 4.7. This provides a very relevant description of the interaction of these psychological activities with their environment as we can see these psychological activities as part of an individual's and group's knowledge process.

**Figure 4.7 – Homeostat as a Learning Loop**

4.9 System 1 - Group and Individual Level of Recursion

Beer explains that the “Purpose of a System is What it Does” (Beer, 1985, p 99) and that this is dependent on the position of the observer. In the case of this research we need to take the psychological Social Identity viewpoint that the purpose of any group is about the self-preservation and self-enhancement of its members and membership - not its explicit activity. The DOING in this case is the making of a social group and social group activities, i.e. the psychological process of how it is formed and how it is maintained. These functions must therefore define its implicit purpose, to maintain self-esteem, just as effectively as the main tasks of the group may define its explicit purpose.

The main psychological activities of Social Identity Theory that make the group by maintaining operations with the social environment and transforming social resources through the attenuation of environmental states or the amplification of system states are; self-categorization comparative and normative fits, distinctiveness, in-group favouritism and out-group derogation. These activities interact with the social environment with the purpose of creating or maintaining a group and its identity.
To achieve requisite variety and maintain the viability of the group these activities must attenuate the external variety to a level that allows the group control of its identity processes and yet, at the same time, be capable of being amplified sufficiently to ensure that the group can maintain relevance in its environment.

One of the principle requirements for each System 1 is that it is capable of autonomous or independent operation, although for the purposes of viability it must also be related to the system in some manner that provides and overall coherence and identity. Each of the activities named above can act as independent social activities, however, this does not prevent them from being linked or related, in fact the process of System 1 would expect it. This linking or vertical variety restricts the freedom of these functions in order to achieve cohesion and coherence. The linking of these activities is undertaken by System 2 using group norms or shared attitudes and will be covered in the next section. These psychological activities are detailed below in order of occurrence i.e. the sequence that they are believed to operate on a group in its social environment.

[Self-categorization comparative fit] is the psychological activity by which people identify with the groups around them based on the principle of meta-contrast. This is a social transformation and, therefore, a System 1 component and as such it is directly connected to the environment by a homeostat that attenuates and amplifies the process of self-categorization, see Figure 4.9.

[Self-categorization normative fit] is the psychological activity by which people identify with the groups around them based on the principle of perceiver readiness. That is, having consciously or sub-consciously made a comparative fit of an individual, or a group, to an internally maintained schema of that group type they then examine and compare the norms and behaviours that they observe to confirm their comparative assessment and self-select with groups with whom they have the most in common. Along with self-categorization comparative fit the degree of normative fit is an indication of the salience of a group to an individual. This is a psychological activity and, therefore, another System 1 component. The process of normative fit is also a homeostat that attenuates and amplifies the categorization process managed by the image of the group prototype. Both psychological activities of self-categorization are regulated by social value in System 3.

Once an individual self-categorizes with a group they then seek to establish the social value of its identity by assessing its distinctiveness. [Distinctiveness1] is the degree that an individual believes a group is different from other ‘comparable groups’ on a dimension that is important to him. [Distinctiveness2] is the degree that individuals in the group are actively engaged in this psychological activity on a regular basis. The other ‘comparable groups’ are out-groups, although the degree of threat may range from ‘severe’ to ‘just not us’. Distinctiveness is an interaction with the social environment as both a ‘learning loop’ and a transformation, and therefore a System 1 operation connected to the ‘outside’ through a
homeostat that attenuates and amplifies the differences in the groups, again through the regulation of social value.

Distinctiveness can be achieved by identity enhancing behaviours. These are [in-group favouritism], which is the self-reflective psychological activity by which group members enhance the social value of their group and themselves by directing positive actions inwards to the group and, [out-group derogation], which is the psychological activity of directing negative actions outwards to rival groups. The processes of in-group favouritism and out-group derogation act on the environment and the system at the same time; attenuating the positive values of group membership both internally for current members, and externally for new members, while attenuating the activities of out-group members in the environment. The creation of sub-groups within the main group can cause in-group favouritism and out-group derogation to be directed within the group causing a breakdown in the coherence and cohesion of the group and the creation of multiple images of prototypicality. In-group favouritism and out-group derogation are social operations which utilise the feedback operation of the homeostat and therefore System 1 components.

The theory of optimal distinctiveness suggests that there is a limit to how much people are prepared to surrender their self-concept and suggests that they attempt to find a balance between their personal identity and the group identity. [Optimal distinctiveness] is, therefore, the psychological activity by which people assess how much they want to be included in the group identity and whether they are prepared to give up their personal identity in favour of the groups. The only way that this can be achieved coherently is if their personal identity is aligned with the group identity in key areas of the group prototypicality.

One solution to this alignment is if people can find a unique place in the group that benefits themselves as well as the group. The appreciation that they feel from the group is measured with one of the social value components; specifically, self-value. Optimal distinctiveness should therefore, be closely associated with self-value, and it should be strongly linked to self-esteem, their total measure of satisfaction with group membership.

An assessment of the exclusiveness of groups is an additional psychological activity that occurs as an inherent result of human social activity. It is not part of Social Identity Theory but needs to be recognised at this stage and included as a component. It can be defined as the ease or difficulty with which people can join a group. This is the group’s social [boundary] and is a measure of the prejudice, exclusivity and elitism in a group. Boundary can be seen as the ‘limits of membership’ of the group.

A summary of the components is shown in pictorial form in Figure 4.8 and the System 1 in Figure 4.9.
Figure 4.8 – System 1 Components
Figure 4.9 – VSM System 1 at an Individual Level of Recursion for a Single Individual
4.10 The Individual’s Meta-System

System 2 regulates the processes of System 1 shown earlier, by managing the cohesion of the self-categorization, distinctiveness and identity enhancing behaviours by utilizing the individual’s norms of behaviour, rituals (habits), attitudes, values and standards handed down from the meta-system. At the same time System 3 manages the processes of meta-contrast and perceiver readiness that regulate the self-categorization processes in System 1 and the process of functional antagonism i.e. the ‘hear and now identity’ along with ensuring that the social behaviours conducted by System 1 have coherence. System 3 also monitors the self-value the individual achieves for appreciation from other group members. System 3* audits the System 1 activities for transgression of individual values and norms, while System 4 manages the individuals personal foresight and anticipation. System 5 maintains the individual’s beliefs, identity and ethos, ‘concept of self’ and ‘group identity’ which, according to social identity theory, exist on a continuum.

System 5 works to balance System 4’s ‘plans for change’ and System 3’s maintenance of the ‘here and now’ to maintain the identity in accord with the environment. System 5 maintains prestige. Figure 4.10 shows the individual’s meta-system.

*Figure 4.10 – The Individual’s Meta-System
4.11 Cohesion

Cohesion is managed in the VSM by System 2, however, before translating the psychological activities of Social Identity Theory to components in the VSM model a more comprehensive discussion of cohesion is required.

Cohesion between the levels of recursion is vital in the VSM for a system to function effectively (Law of Cohesion) (Beer 1979);

“We have seen how important it is to a Viable System that the lower levels of recursion are coherent with the higher levels. Without the embedded systems working in tandem with the system as a whole viability will be lost according to the Law of Recursion and the Law of Cohesion. (Beer, 1979)

To cybernetics, “cohesion is the model, self-similarity and self-organisation rolled into one” (Beer, 1979). The embedded sub-systems of a recursive structure must conform to the key attributes that make the identity of the system;

To understand cohesion well in cybernetic terms is most important, because it governs the question of identity in the viable system, and because its practical application is potentially valuable. (Beer, 1979, p351)

Since, identities are a ‘summary of the whole’ in social systems this implies that the beliefs, values and attitudes that go to make up those ‘nested’ identities must, in compliance with the Law of Cohesion, align for the system to become viable. Espejo (2002) calls the System 2 components in a social system the “non-autonomous processes of production” that create themselves though meaningful relationships.

However, if groups could only function if everybody was aligned in values and beliefs little would ever get done;

“Given the number of groups to which an individual might belong, his or her social identity is likely to consist of an amalgam of identities, identities that could impose inconsistent demands upon that person. Further, these demands also may conflict with those of the individual's personal identity (Cheek and Briggs, 1982; Leary, Wheeler, and Jenkins, 1986). Note that it is not the identities per se that conflict, but the values, beliefs, norms, and demands inherent in the identities. In organizations, conflicts between work-group, departmental, divisional, and organizational roles are somewhat constrained by the nested character of these
roles; that is, each hierarchical level encompasses the former such that the roles are connected in a means-end chain (March and Simon, 1958).

One of the important concepts in Social Identity is that initially it does not appear necessary for there to be cohesion between deeper constructs such as values; an individual can join an organisation or group and not only differ in key beliefs from those around him but disagree with the values of the group with which he is associated. Under the process of comparative fit and meta-contrast he simply sees a common connection that has more relevance than any other around him. The ability of people to use an aspect of identity to form alliances, enables them to be very adaptable to the circumstances.

“Perhaps the greatest contribution that SIT makes to the literature on organizational behavior is the recognition that a psychological group is far more than an extension of interpersonal relationships (Turner, 1985): Identification with a collective can arise even in the absence of interpersonal cohesion, similarity, or interaction and yet have a powerful impact on affect and behavior. (Ashforth and Mael, 1989, p26)

Dion (1973) demonstrated that one may like other group members, despite their negative personal attributes, simply by virtue of the common membership (cf. personal vs. social attraction, Hogg and Turner, 1985). In short, "one may like people as group members at the same time as one dislikes them as individual persons" (Turner, 1984, p. 525).

“…and suggest that collective identities (whether social, organizational or corporate) are (a) made viable as a function of their positivity and distinctiveness, (b) inherently fluid rather than fixed, (c) a basis for shared perceptions and action, (d) strategically created and managed (i.e. with a more or less conscious intention to differentiate a group or organizational unit from others), (e) associated with behaviour that is qualitatively different from that associated with lower-order identities and (f) the basis for achievement of higher-order material outcomes and products". (Cornelissen et al, 2007)

The process of comparative fit appears, therefore, to relate to a group's explicit purpose, i.e. that which is readily identifiable to outsiders, the apparent purpose of the group, what it does. This can be very fluid and is determined by the context of the situation and the inter and intra differences between in-group and out-group.
However, despite this The Law of Cohesion, as it relates to social groups of nested beliefs and values, appears to hold in social systems as they become more established;

"a wealth of evidence thus indicates that those who perceive themselves to share group membership in a given context are more likely to trust and respect each other, to help each other, and even to seek greater physical proximity to each other."

(Haslam, 2011, p59)

The difference in cohesion from comparative fit where there is a top down identity and normative fit where an internalization of group attitudes, beliefs, values and behaviours is apparent throughout the literature;

“Norms are attitudinal and behavioural prescriptions associated with these roles or categories. They create expectations about how a person or group of people ought to think, feel and behave. They tend to be defined externally (in formal job descriptions or informal codes of conduct, for example), but are internalized by individual group members." (Sherif, 1936). (Haslam 2004, p 2)

“The idea here is that groups are not only external features of the world that people encounter and interact with, they are also internalized so that they contribute to a person’s sense of self. Groups define who we are, what we see, what we think and what we do. (Haslam 2004, p14)

“social identity is part of a person’s sense of ‘who they are’ associated with any internalized group membership” (Haslam 2004, p21)

We have seen from Ng (1980, 1982) that “the cognitive salience of group identity is not a sufficient condition for normative behaviour to occur”. the Law of Cohesion also suggests that this is true; in other words, using System 2 to coordinate a social system through the use of discipline or creating a strong ‘top down’ identity may create temporary cohesion through comparative fit but it will not create coherence throughout the system, which is a necessary condition for local autonomy to exist.

“Identification also may engender internalization of, and adherence to, group values and norms and homogeneity in attitudes and behavior. Just as the social classification of others engenders stereotypical perceptions of them, so too does the classification of oneself and subsequent identification engender
the attribution of prototypical characteristics to oneself (Turner, 1984)

*Internalization* of these values is a key area where the system becomes viable, as the systems establishes coherence, so it develops its *viability*.

The *process of normative fit* appears, therefore, to relate more to a group's *implicit* purpose; namely that of providing self-esteem for its members and prestige or social value for the group as a whole. People self-select the groups that they wish to join to align with their *beliefs, values and attitudes*, as observed by Schneider (1987) and his Attraction-Selection-Attrition (ASA) framework. As group membership persists and becomes more *salient* the *beliefs* and *values* of the group become more relevant, *normative behaviour* emerges, and *values* can become *internalised*; a “bond” emerges between group members; a sense of ‘us’ System 2 - Group Level of Recursion

### 4.12 System 2 – The Group Level of Recursion

A viable system must maintain cohesion between the operating elements, in this case the semi-autonomous group members undertaking these social interactions. This is achieved through the *psychological activity of depersonalisation*, which is the sense of ‘us’ and *harmony* in the group. *Harmony* [*depersonalisation1*] is defined as ‘agreement of opinions’ and is a measure of the success of the alignment of individuals opinions. [*Depersonalisation2*] the sense of ‘us’ is the alignment of behaviours, achieved by the coordination of the group through *norms, rituals and standards*, they are a natural means to achieve *cohesion* by aligning and coordinating the group, see Figure 4.11. These are the main elements that are *self-produced* by the system to create the *autopoietic* ‘life’ of the system.

Within the VSM, System 1 operations should be as *autonomous* as possible with the minimum *vertical variety* restrictions on their ability to function. The *attenuation* of System 1 operations by *vertical variety* should be limited to what is required to create group *cohesion* and *group coherence* only. System 2 dampens the oscillations of System 1 operations to ensure *cohesion* is achieved for the group as a whole. For social groups System 2 operations are focused around the creation and implementation of *group norms* through the process of *depersonalisation*; creating and maintaining a sense of ‘us’.
Excessive dampening of individual’s identity formation activities in System 1 though the implementation of rules, discipline or the misuse of power will restrict the achievement of requisite variety. Alternatively, if the group fails to create a sufficient sense of ‘us’ the individual sub-groups will look after their own self-interests to the detriment of group cohesion.

So while depersonalisation is the main focus of System 2 it is not, by any means the only activity that System 2 accomplishes. When looking at the cohesion of a social group from a psychological perspective we have to ask what are the resources of a social group – they are not the same things that are the resources of the same group’s explicit activity such as finance or material goods, but the social resources of a group, which are self-esteem, self-value and self-understanding. So the opportunity to develop these, being allowed to speak, being allowed to do, etc…, becomes important for the functioning of the group and it, therefore, becomes important that they are coordinated for the benefit of the group. [Group resource coordination] is, therefore, the degree that opportunities for self-esteem, self-value and self-understanding are allocated and coordinated for the benefit of the group as a whole. In reality, this means that all individuals in the group need to feel that they have equal opportunities for development as a group member.
While *group resources* relates to the movement of opportunities to individuals, the *psychological activity* of *social mobility* is the movement of individuals to opportunity, in other words the ability of people to move from sub-group to sub-group to enhance their *self-value*. To be viable both these processes have to be assigned to individuals and sub-groups for the most *social value* and *prestige* of the group. *Group resources*, therefore, along with *social mobility* will create oscillations in the group as each sub-group seeks the best opportunities for itself. The assignment of both processes must, therefore, be dampened by System 2 regulation to ensure *cohesion*.

The opportunities to enhance *social value* and the ability for people to be able to move between sub-groups are, therefore, indications of the degree of *freedom* in the group, which is a measure of the *vertical variety*; therefore, the degree that individuals feel the need to move from sub-group to sub-group will be a key indication of the achievement of *requisite variety* within the group. *Group resource* and *social mobility*, in the research context, are therefore, a measure of the degree of *autonomy*, *freedom* and *requisite variety* of the group; summarised by the concept of *power sharing*. Mechanisms applied to dampen *group resources* or *social mobility* oscillations by discipline or direct use of power or control could restrict *requisite variety*. Figure 4.12 shows the Systems 2 components for the model.

To maintain *requisite variety*, individuals in the group need to feel that they have an equal opportunity to enhance *social value*, or that the opportunities are legitimately controlled. Legitimate control should be through established *norms*, *rituals* and *standards* within the group that provide for the development of individuals as a group member within accepted rules that benefit the group and individual alike.

Relevant to the coordination of the group and the effective operation of System 2 is the level of *network activity*, the degree of *social interaction* evident within the group. Within System 2 the degree of *network activity* will provide drive to create the necessary *cohesion*. Little or excessive *social activity* will suggest poor *requisite variety*. 

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4.13 System 3 – The Group Level of Recursion

System 3, ‘here and now’, is the system that manages the emergent processes necessary for ‘shared organising’. System 3 has to achieve **resonance, coherence and synergy** in order to develop **group social value** and **stability** by managing the processes of; **self-categorization**, **group distinctiveness management** (**uniqueness** and **identity enhancement**), **group enhancement behaviours** (**out-group derogation**, **in-group favouritism**; **trust**, **belief**, **trait attribution**, **stereotyping**) and **group boundary management** (**social mobility**, **social stability**, **social creativity**, **social conflict**). To do this it uses the **command channel** through which it controls System 1 **resource allocation**, **accountability** and **attitude and knowledge management** (**transitive memory** and **network activity processes**).

**Group coherence** is an emergent property that occurs when individuals or sub-groups come together to form a cohesive group, it is traditionally expressed as ‘the whole is worth more than the sum of the parts’. The opposite of **group coherence** is the psychological activity of **[social conflict]** which is the degree of rivalry within the group. **[Social conflict]** is used as a component because it is easier to measure than social cohesion, however they are treated as the opposite ends of a continuum. **Social Conflict** occurs when there are individuals or sub-groups who see each other as threats or as competitors for resources (opportunities for enhancing **self-esteem**). This will cause the group to lose its **cohesion** and subsequently its **coherence**. As stated above System 3 achieves **group coherence** through the management of System 1 activities and the monitoring of the **social value** of the group. **Social value** is the summation of **self-esteem**, **self-value** and **self-understanding**.
[Self-esteem] is the psychological activity that can best be described as “an attitude towards oneself” and in the research is used as a measure of the ‘satisfaction achieved through group membership’ by the individuals of the group. Self-esteem is a System 3 component because it causes the System 1 identity formation processes to respond to its value. Self-esteem is therefore a ‘variety attenuator’ in that it ‘absorbs the variety’ of System 1 identity formation processes by providing an ‘encapsulation’ of the ‘satisfaction of group membership’. Also, as a measure of the ‘satisfaction achieved by group membership’ its value is considered to be a good indicator of the degree of power sharing within the group, based on the assumption that people achieve greater self-esteem when they feel that they have a say in the running of the group.
The second element of social value is [self-value], which is a measure of the ‘appreciation’ an individual feels he/she is given by the other members of the group for their unique contribution. Self-value should be strongly related to self-esteem; the total measure of self-worth and satisfaction with group membership, and optimal distinctiveness, the need to balance social identity with personal identity. Self-value acts as a variety absorber on the System 1 identity processes below it by attenuating those aspects of appreciation for individual effort. Figure 4.13 shows the group System 3.

The last element of social value is [self-understanding] which is the degree that individuals derive ‘meaning’ from their group membership. The very process of self-categorisation creates significance for an individual because there has to be a reason or a decision to “create a distinction” (Spencer-Brown). The fact that recognition of the distinctions of a group is applied to the self is a key principle of Self-Categorization Theory. Self-understanding is, therefore, a variety absorber of the System 1 components below it by attenuating the function of the components that create distinctions and hence meaning. See Figure 4.14 and 4.15.
### 4.14 Autonomic Adaptation – The algenode

Beer (1985) describes the three four homeostat as the “organ of adaptation” of a viable system. He defines this as the interaction between System 4, the “there and then” and System 3, the “here and now”. System 5 balances these two systems to maintain the identity of the system in its role as “identity protector”. This function creates the adaptation that the system needs to be ready for the future while at the same time coping with the present.

From a psychological standpoint this is known as *forethought* (Bandura, 1989) and a less cognitive function of *anticipation*. *Forethought* and *anticipation* for a group are social processes whereby the members reach consensus as to the future direction of the group. These will be examined in section 4.16. However, there is a second form of adaptation that occurs in viable systems that Beer (1985) refers to as “autonomic”. This is a ‘low level’ function that keeps the system in balance. In Brain of the Firm (1972) Beer describes the operation of this autonomic mechanism with a description of an ‘algenode’. This process is of interest to the research because much of the change in a social group occurs subconsciously through autonomic processes (Haslam, 2004).

For the purposes of the research ‘autonomic adaptation’ is taken specifically to mean the automatic change of the system as opposed to *forethought*, *anticipation* and *innovation* which are ‘calculated changes’ originating from System 4. They are discussed later in the chapter. Despite the label of ‘automatic change’ autonomic adaptation will nevertheless be controlled by System 5 which acts as the ‘protector of identity’ and manages change and stability originating from System 3 and System 4.

*Autonomic adaptation* is, therefore, the degree that the group is able to automatically adjust its internal components to match changes, or perturbations in the environment. It is a
process that involves System 3*, System 3 and System 2 operating as an algenode (Beer, 1972, p67). Problems with System 1 activities picked up by the audit processes of System 3* and the algedonic signal act as an algenode to System 3 causing ‘pain’ or ‘pleasure’ which in turn causes System 3 to set new norms in System 2 to adjust the behaviours in System 1 providing this is acceptable to System 5.

*Autonomic adaptation* is a process, therefore, that spans several VSM Systems. The algedonic signal is an integral part of the algenode which causes the system to adapt. Figure 4.15 shows the interconnection of System 3*, 3 and 2 with the *autonomic adaptation* process.

When the audit process feels ‘pleasure’ or ‘pain’ from the algedonic signal it causes System 3, the control mechanism of attitudes and intentions, and System 2, the coordination mechanism of norms of behaviour, to change. Ultimately the process causes changes to the belief system at System 5, Yolles shows this mechanism, known as autopoiesis between System 1 and System 3 and ‘autogenesis’ between System 3 and System 4 and 5, in his representation of the VSM using Schwarz's meta-model, see Figure 2.4. The algenode is a large variety attenuator (Beer 1972 p 233), as it sets the mode of behaviour of the system.

*Autonomic adaptation* also applies to the operation of the System 1 homeostats linking the individuals and the group to the environment. *Autonomic adaptation* is a fundamental aspect of homeostatic operation (Ashby, 1948) which uses feedback to maintain stability of its system until it passes a critical threshold where it then adjusts the states of the system to maintain balance. Ashby called this adaptive system ‘ultra-stability’. In this respect a group is always adjusting to the social context through its main transformations of; self-categorization, self/group enhancement, depersonalization and social mobility.

The learning and *autonomic adaptation* of these homeostats can be compared to Heidegger’s concept of ‘dasein’ and Smith and Semin’s (2004) proposal of ‘situated cognition’ in that they exist in the ‘here and now’ responding readily to changes in the environment.

Heidegger used ‘dasein’ as a means of distinguishing everyday consciousness from how ‘being’ shapes our understanding of the world. To Heidegger ‘dasein’ is how we are always ‘a being engaged in the world’. While Smith and Semin (2004) argue that social cognition is concerned with the regulation and coordination of action between people based on “adaptive action”, that it is deeply embedded in human neural structures at a low level and that these interactions are mutual and continuous and related to environmental, relational and communicational contexts. Lastly they also suggest that this ‘adaptive action’ is based on more than the cognition of individuals but employs ‘trans-active memory’ and ‘social coupling’.
While the process of autonomic adaptation spans the homeostats in System 1 and the meta-system it is shown in the model in System 3*. This is a shortcoming of the use of components which require each component to be placed in a single sub-system. The adaptation key process attempts to overcome this deficiency by covering the full range of systems.

4.15 System 3*

System 3 also manages the [audit] process of the System 1 activities; known as System 3*. Audit is the VSM System 3* component that monitors the System 1 operations for signs that they are un-aligned with the purpose of the system as a whole. The algedonic signal [algedonic signal] is the alert from the operational system to the meta-system via the accountability channel to warn that things are ‘not normal’. See Figure 4.15 and 4.16. Social Identity Theory does not indicate how this could be achieved; however, social cognition suggests that this is maintained through ‘gossip’ which seeks to audit the transgression and failure of group norms and adapt them to maintain the social value of the group, see Section 2.3.4.

There are three problems with the concept of a ‘social group audit system’. The first is what serves as the ‘audit’ channel in groups? The second; what is the mechanism by which the ‘audit’ signal is passed? and the last is what is the algedonic signal in a social group?

Addressing the last question first, what is the algedonic signal in social groups? For an ‘alarm’ to work it has to be something that threatens the group and is common to all; we have seen that social value is the principle method by which people assess the relevance of their groups. However, while the System 3 components self-understanding, self-value and optimal distinctiveness may contribute to the reason why an individual is related to the group these aspects cannot serve as an alarm as they are different for all. This leaves the collective self-esteem and uncertainty reduction of the group as the main areas for alert. So anything that threatens the self-esteem or creates uncertainty will raise an alarm. But how is it achieved?

With individuals it is proposed that Self Discrepancy Theory (Higgins, 1978), based on Cognitive Dissonance (Festinger, 1957) serve as an ‘audit’ signal for individuals by monitoring their beliefs. There is an apparent correspondence between Self Discrepancy Theory and System 4 operation. Beer demonstrates that System 4 must contain at least three models to conform to the Conant-Ashby theorem (Beer, 1979, p 234), namely; a model of the environment, a model of the system and a model of itself. Self-Discrepancy Theory (see section 2.8) also asserts that each individual holds three models, known as self-beliefs. These are a self-assessment of the ‘actual’ self, based on examination of own behaviour, an ‘idealised’ view of self and ‘ought’ view of self, that is the belief of how one should behave. These beliefs are held from two different ‘standpoints’, namely, self and other. These can be
correlated with the VSM models. ‘Actual’ matches the internal model of the system and its behaviour, ‘ideal’ matches the potential of this model and ‘ought’ matches how the self-interacts with the environment from a wider perspective.

Beer demonstrates that System 3* must audit the system for signs that the operational activities of the sub-groups, that is the System 1s, are congruent with the system as a whole. This audit process is part of the System 3 Algenode, the “Big Switch” (Beer, 1972, p67).

**Figure 4.16 – System 3* Components**

![System 3* Components](image)

We saw from social cognition (Section 2.3) that our individual cognitive processes operate by ‘auditing’ the world around us for change through the use of schema and at a basic level trigger our emotions when they wish to ‘alarm’ us.

“Messages that evoke surprise or curiosity because they violate recipient expectancies will lead to greater message scrutiny regardless of whether they emanate from a majority of minority.”

(Mackie and Hunter, 1999).

At a higher level of abstraction, Self-Discrepancy Theory, see Section 2.8, similarly ‘audits’ misalignment of our social behaviour with our beliefs and, again, ‘alarms’ us through the use of emotions of shame, guilt and anxiety. System 3* does not swamp the meta-system with audit reports it only acknowledges when things are “not normal” or raises the alarm with an *algedonic signal* which sends a warning straight to System 5 when serious misalignment is found.

However, no evidence can be found in Social Identity Theory of an equivalent of Discrepancy Theory for the group. Does a group feel collective shame and guilt, or is it felt individually, triggered by the depersonalised persona acting directly on the emotions? While
threats to the *self-prestige* of the group would create significant alarm, a collective emotion would allow greater effectiveness for the System 3* audit process at the higher ‘group’ levels of *recursion* to affect the shared beliefs of the group. Mackie, et al (2009) suggest that these emotions are possible with their Intergroup Emotion Theory. While Kets de Vries (1991) in his book “organizations on the couch” adopts a Freudian view about *dysfunctional* and *neurotic* organization. We are told that they can develop feelings of guilt, adopt collective psychological defences that reduce pain through denial and cover-up, and operate through processes of power that might be unproductive. Yolles (2008) summaries the possibilities of collective emotions;

\[
\text{Structural coupling exists between consciousness-systems ("individuals") and social systems and not directly between individuals. The only reason, why social systems come into existence is the inability of people to read each other’s minds. As an example and referring to management, we can say, management should be a second-order observer of communication that is permanently irritated by consciousness-systems, which in turn are both promoted and contaminated by communications (e.g. motivation, fluctuation). An important core competence of management is the comprehension and the consideration of the delicate requirements of the structural coupling between consciousness-systems and their organization. (Schuhmann, 2004, p621)}
\]

These ‘collective feelings’ are also supported by our previous discussion on Cybersemiotics. The recognition of signs of shared group emotions coupled with the ‘languaging into being’ of a system of shared beliefs and meaning within a consensual domain is possible.

Where, then, are the communication channels for System 3*? Clearly monitoring group behaviour is one; however, while this works well at an individual level it does not work well at a group level, since all people in the group may not be able to observe the behaviour of an extended group. The proposal for the research is that ‘gossip’ provides the key communication channel for *group audit* and also the mechanism for the *algedonic signal*. Hogg and Mullin suggest that;

\[
\text{“Related to this last point, there is also evidence that widespread social uncertainty arising from, for example, massive social reorganization and economic collapse may encourage the development and spread of rumour” (Hogg and Mullin, 1999)}
\]

‘Gossip’ provides a good candidate as it appears to function along the lines of System 3*. People do not waste time gossiping about things that are ‘normal’, gossip only has value
when it is about something that transgresses system norms and ethics or highlights a threat to part of the system or the system itself. In addition gossip, to coin a term “spreads like wildfire”. It has the ability to send an alarm through the system and bypass the normal command chain, the very requirements of an algedonic signal.

‘Gossip’ was therefore, identified as the principle channel used to pass the alert and while Beer shows the algedonic channel functioning from System 1 to System 3 directly (see Figure 2.3) as part of the accountability channel, it was considered that in the case of social groups it was more likely that it passes from System 1 to System 3 via System 3 because it was considered that people do not ‘confess’ when they transgress group norms, rather they are audited by ‘gossip’. In other words gossip is the audit channel and the information contained in the channel can create an algedonic signal. For this reason it has been included in Systems 3*. A high score for the component algedonic signal would therefore suggest that there is an alert to the meta-system present in the group.

4.16 Forethought, Anticipation and Innovation

The alignment of group ethos, a System 5 activity, is only part of the role of the meta-system’s ‘leadership’ activity. While individuals have forethought (Bandura, 1989, p. 39) and purposive organisations may have a ‘strategic’ department or individual who ‘looks ahead’ to anticipate the future, self-constructed and self-steering social systems have to create an emergent view of the future through the sharing of the intentions or expectations of the group. This is an activity that can be ‘socialised’ as an extension of ‘forethought’ or one which can be ‘anticipated’, that is ‘understood through shared feelings’ by the group as a whole. Beer provides a mechanism for innovation, that is the translation of one systems states to another through the constant adaptation of the system (Beer, 1979, p343).

The future direction of a group is one that can be achieved by consensus through forethought, that is discussion, although, it is an area where the misuse of power is frequently applied. For a group to become viable, however, it has to form a system for steering the group that in some way ‘anticipates’ the future.

“Goal-seeking by definition, due to its forward-looking nature involves anticipatory behaviour (Rosen, 1985). Through imagination we envisage the completion of the very act we are about to embark upon (Shibutani, 1961). Furthermore, we anticipate the responses of others whenever we engage in social action and pitch our behaviour accordingly to take these reactions into account (Mead and Morris, 1974). Anticipation is also a form of learning II (Argyris) or deurtero-learning (Bateson) according to which we anticipate patterns of events by projecting forward into the future. In this way, we overcome the errors of over-learning.
from past experiences by anticipating that things could happen that we have not had to deal with before. It is a form of learning that transcends the limitation of ordinary learning (from experience) (Bateson, 1973) or learning I (Argyris and Schon, 1995). “ (Stokes, 2006, p33)

It does this by amplifying possible states of the environment and examining how its system would respond. From this mechanism it is able to develop future scenarios and best possibilities for its system. Discrepancy Theory (Higgins, 1987), from social cognition, requires that several models of self, ought and actual must be maintained by an individual’s cognition and also the Elaboration Likelihood Model (Petty and Cacioppo, 1986) holds a subconscious view of the world in order to assess environmental ‘cues’ to assign priorities to attitude formation.

A reductionist or objectivist perspective of this process is perfectly straightforward; in other words somehow the system develops a representation of these three aspects within itself, however, Maturana’s (1978, 1980, 1983, 1985) arguments about the concept of cognitive models throws this viewpoint into disarray. Similar arguments about our connection to ‘reality’ are forwarded by Piaget and Ibáñez (1992). Piaget’s anti-empiricist argument is identical to Ibáñez who notes that knowledge cannot logically be viewed as a representation or a copy of reality, since in order to know whether something is a good copy of something else we need to independently access both versions so as to compare them. However, how could we possibly have access to reality independently of our knowledge of it? As explained by Harnden;

“Maturana suggests that the way we orient ourselves in the world is not a direct perception that grasps the features of the environment we find ourselves within, but that ourselves and our medium are coupled in a manner analogous to the coupling between the airline pilot flying instrumentally, and the environment the plane is in.” (Espejo and Harnden, 1989)

This “structural coupling” is how, Maturana suggests, we “find our way around our own cognitive space”; which is a domain in which system and environment are in “coherent interaction” where both form ‘one medium’. In this world how an individual or system interprets the distinctions of the environment and its structural couplings with that environment create the ‘reality’ of its cognitive space. In the VSM “structural coupling” is represented by autonomy (Mingers 2002). The models of the environment, self and own cognition needed in a VSM System 4 can be viewed not as models of representations of an ‘objectivist’ reality but as a ‘hermeneutic enabler’ that we ‘bring forth’ to understand the ‘structural couplings’ within a ‘consensual domain’ or in VSM terms “the groups autonomy within its own boundaries”. According to Maturana these are ‘language’ into existence as
we ‘orient’ ourselves through language, although we can add ‘emotional understanding’ to this in view of our discussion of Cybersemiotics.

The structural coupling with the environment and recursion turns a Viable Social System into a ‘cognitive process’. So, by Harnden, System 4 can be seen more as a ‘modelling facility’ within a system that enables the system to say;

“think what you are doing, and in that process demands that you discover who is doing the doing”. (Espejo and Harnden, 1989)

The application of this to an individual is straight forward but for a collective this implies that the system itself becomes a living system by means of its autopoietic connection to the plane of ‘being’ through the process of autogenesis. Wegner proposed that groups use a ‘trans-active’ memory to create group cognition (Wegner, 1986), in a similar way it is speculated that they must also create ‘prototypicality’ for group membership. These processes create a consensual domain where the system and its couplings with the environment are understood within its reality by being ‘languaged into being’.

This has complicated consequences for a social system. If ‘reality’ is a construct that is held in system 4 and it is structurally coupled to the environment in a ‘slow elegant dance’ then the construct of that reality relies on the systems own confidence and credibility of its own processes. In particular, a structural coupling is susceptible to self-fulfilling prophecies and these are indeed evident in the cognitive biases such as self-confirmation bias (Kahneman and Frederick, 2002).

“Henshel, … extends the well-known notions of self-fulfilling and self-defeating prophecies to serial self-fulfilling prophecies, where the accuracy of the earlier predictions, themselves influenced by the self-fulfilling mechanism, impacts upon the accuracy of the subsequent predictions. He distinguishes credibility loops and confidence loops. (Geyer, 1991, paragraph 5)

Stokes (2004) suggests how System 5, that is the identity of the system, resolves the tension between the forethought or anticipation of System 4 and System 3 which has to meet the demands of ‘here and now’ and maintaining group coherence;

“The acting person is in a state of constant tension between what he/she is here and now and what he/she is passing over into becoming in the ‘there and then’. This tension is managed by our sense of identity [System 5], another higher order control system. It manages the rate of change that is occurring between levels 3 and 4 so as to keep things manageable within homeostatic limits
of cohesion on the one hand and the demands of the imminent
and the future on the other. Change always poses a threat to
existing ways and definitions. It therefore has to be managed so
that there is a smooth transition of identity into the future. That is
why Level 5 regulates interactions between Levels 3 and 4. Level
Five carries out the requisite identity work according to which the
new is joined to the old and a narrative of continuity is formulated
(Somers 1994). Level Five is the self-reference level of
identity - it represents the self's own understanding of itself
to itself.” (Stokes, 2004, p33)

Forethought and anticipation align with the interpretivists view of Appreciative Systems
(Vickers 1983). Checkland (1999) expands Vickers idea that people attach meaning to a
code of communication that is constantly updated, by suggesting that individuals make a
“mental evaluative act, a cultural mechanism which maintains desired relationships and
deletes undesired ones”. Vickers and Checkland believe that humans make ‘value
judgements’ by comparing a mental ‘ideal’ of a situation with a ‘reality judgement’ of the
state of affairs they see around them created from their subjective beliefs, standards and
experiences. Vickers and Checkland then suggest this leads to action which in turn may lead
to an adjustment of their Appreciative Settings. This method of ‘Appreciative Cycle’ aligns
very closely with the Theory of Planned Behaviour (Ajzen, 1991) which suggests that we
form intentions based on our behavioural beliefs, attitudes and subjective norms. It also
aligns with Self Discrepancy Theory (Higgins, 1987) where the process matches the
interaction described above between System 3 and System 4 and the models of the systems
(Actual, Ought, and Ideal) that are maintained in System 4. However there is one
fundamental difference, while the constructivist believe that the Appreciative Cycle leads to
action the Theory of Planned Behaviour recognises only that it develops intentions and that
these intentions can be interrupted by habit, desires, conditioning, and emotions, as
described by Gollwitzer’s (1990) two stage process.

Once established it is easy to see how hard it is to change a group's culture by attempting to
use simplistic mechanisms such as commands and how the process of adaptation and
autonomic adaptation are probably the most effective. Schneider (1987) and Schein (1983)
researched the effect the ‘founder’ of an organisation plays in creating its organisational
culture and determined that it has a significant importance. Chatman et al summarise why
this could be the case;

“…by rigorously screening employees to identify those who
support his or her ideals and values. Once selected, founders
continue to socialize their employees into their way of thinking,
and serve as a role model, encouraging employees to internalize these values “ (Chatman et al, 2008, p 77)

This suggests that socializing, rather than command works effectively to manage the behaviours of social groups and will be examined more closely under the examination of forethought. It also suggests that when a group forms by first establishing its viability, its identity, beliefs and values (System 5) the homeostats between its systems will maintain stability for some time into the future.

4.17 System 4 -Group Level of Recursion

System 4 of the VSM is charged with the function of reacting to the possible states of the environment in the future; as Beer states System 4 is “outside and then” while System 3 is “inside and now” (Beer, 1985, p 115). To do this Beer suggests that System 4 must maintain three models of activity; a model of the environment, a model of its Viable System and a model of System 4 itself. The three models that System 4 maintains are seen in social groups as a model of the social environment, prototypicality/group attitudes and the planning processes. These reflect the Conant-Ashby Theorem (Conant and Ashby, 1970) that “every good regulator of a system must be a model of that system”

Beer (1985) places ‘self-reference’ in System 4 because it is where the system holds a model of itself (see Figure 2.14 – The VSM System 4). However, this is only a part of the self-referencing process because as Stokes (2004, p33) states System 5 is the “self-reference level of identity” as it represents the “self’s own understanding of itself to itself”, The relationship to self-reference between System 5 and 4 is confirmed by Beer;

“…SYSTEM FOUR is not only concerned to manage the outside-and-then, but to provide self-awareness for the System-in-focus…

….it is the operational basis for the final self-referencing, system-closing, System Five to which everything is now leading.” (Beer, 1985)

The self-reference of a VSM is therefore a model of the system held in System 4 that is used by System 5 to maintain continuity of its identity. This model is represented in the research by [Prototypicality] and [group attitudes], which are the internal model of the system ‘itself’ of shared group attributes. [Prototypicality] and [group attitudes] are the self-reference of the system to itself- it is the image the system has of its totality – what it is that is used by System 5 to achieve ‘closure’ and maintain identity.

The [model of the external environment] is the degree that there is a shared view within the group of social categorization, and an understanding of group boundaries in the environment and such as; social mobility, social stability, social creativity and social conflict.
Lastly, [planning processes] is a measure of the shared agreement about the ‘possible and probably’ group achievement and group potential that is generated through anticipation, innovation and forethought and used to derive future paths for the group. It is the main component in the adaptation process that relates the Systems three, four and five.

“…it is just this infinite regression of self-images [System 4’s model of itself embedded in its own model of the whole system] that seems to hold the key to the characteristic self-awareness of viable systems” Beer (1985).

Through the models held in System 4, System 4 itself is able to anticipate and innovate future states of its system in the environment.

**Figure 4.17 – System 4 Components**

![System 4 Components Diagram]

Prototypicality is the model of the ‘ideal group member’ and in the research context is the ‘image’ held by the individuals of the group. As a System 4 component prototypicality represents the model of the system ‘itself’ that must be held by System 4, it, therefore, absorbs the variety of the identity related components in the systems below it by creating a single representation of the group as a stereotype. Prototypicality contains not only a copy of a typical group member but also their normative behaviour and the embedded [group attitudes]. Attitudes are pre-planned opinions, feelings and behaviours towards specific events, items or states in the environment Group attitudes are separated as a component because they are a measure of the degree of common outlook amongst the group and it is important to detect this. Group attitudes absorb the variety of the normative components in the systems below as they represent the limitations to behaviour in anticipated states.

Planning processes is a model of System 4 and is necessary to generate high variety responses to the System 4 enquiries in the environment for a creative response using forethought, anticipation and innovation. See Figure 4.17 and 4.18.
4.18 System 5 – Group Level of Recursion

Lastly, System 5 contains the functions that maintain group identity by balancing the needs of System 3, the “here and now”, and System 4, the “there and then” as described above. To provide the closure between these two, System 5 must hold a model of System 3 and System 4. The higher order models of entitativity, ethos and prestige provide a means of comparing the view from ‘outside’ with the view from ‘within’. Entitativity [entitativity] represents the ‘group’s uniqueness’ and is used as a component to measure the amount a group is seen as ‘distinct and unique’. Entitativity ‘absorbs the variety’ of the lower level identity and cohesion components by ‘attenuating’ the main aspects of the group identity and coherence processes in System 3 and 4 by ‘encapsulating’ the ‘unity’ of the group. Similarly prestige [prestige] represents the system model for how much the group is ‘valued’ by the environment and by itself, it ‘encapsulates’ this ‘value’ of the identity to the group, in a similar way to how entititity encapsulates the ‘uniqueness’ of the group, ethos encapsulates the ‘ideals’ and purposefulness encapsulates the ‘drive’. Ethos [ethos] represents the ‘guiding
ideals and beliefs’ that provide a mechanism to identify the group with ‘what it stands for’. 
Ethos, ‘encapsulates’ the main aspects of the group that create cohesion by ‘absorbing the variety’ of the lower level cohesion processes in System 4 and 3 by ‘attenuating’ the behaviour of the individuals of the group and directing their activities in a specific direction; hence reducing their number of states. Lastly [symbols] of identity will used to clarify and reinforce the purpose of the group. These three components help the system achieve requisite variety by attenuating the complex states of the system and the environment into simple ‘comparators’ that enable judgements for the group to be made.

Figure 4.19 – System 5 Components

System 5 also contains two other important components; purposefulness [purposefulness] and closure [closure]. Purposefulness as a System 5 component represents the degree of ‘shared purpose’ within a group. Purposefulness absorbs the variety of System 3 identity formation and cohesion components and as such provides a measure of the amount of ‘drive’ in the system to create both identity and cohesion. Closure represents the degree that the system is organisationally closed from its environment A viable system should be ‘structurally coupled’ to the environment though its System 1s – that it is an ‘open system’ that allows; energy, information, people and materials in, but does not allow outside events to manage its internal processes; it may react to them to maintain its internal balance but it is not controlled by them.

Closure is the degree that a group feels that they are insulated or protected from events in the outside world, and have achieved control of their own variables. The group prototype could be said to exist in System 5 as the ideal behind the policy of the group, or in System 4 as a model of the group’s system or as a System 3 process that manages the normative function of depersonalisation.
Lastly *boundary* is the limits of membership of the group. In any group it relates the strength of identity, in particular the strength of the prototypicality, and the rigor with which the *normative* behaviour is enforced. In other words it provides an indication of when individuals who do not fit the definition of the group prototype are excluded from the group. Boundary is a System 1 activity because it is actively involved in operations in the environment. See Figure 4.19.

*Figure 4.20 – Social Identity as a Viable System The Full Model*
Figure 4.21 - VSM – Social Identity Components
4.19 The Key Processes

While the components show the value of psychological activities the key processes show the interactions and relationships between these components in significant functional areas that span the full range of the VSM sub-systems. This attempts to capture the complex interactions in the VSM between the different sub-systems. The key processes are; System Closure, Individual/Group Identity Formation, Cohesion and Coherence, Power Sharing and Adaptation.

4.19.1 System Closure Process

The system closure of the group is the point that we would consider that the group has achieved a significant level of isolation from the environment so that it can be managed by its internal components; in other words, it is `organisationally closed' (Maturana, 1976). The research proposed that this is indicated by several factors, specifically; the entitativity of the group, - that is the amount the group feels it is a distinct unity, the closure of the group, - the amount it feels it is insulated from the world, the ethos of the group - the amount it feels that it has ‘guiding ideals and beliefs’, its depersonalisation - that is the strength and harmony of ‘us' and finally the boundaries that surround the group - the restrictions on group membership. The system closure process is, therefore made up of the following components across the systems to determine the level of organisational closure of the system as a whole; entitativity, closure, ethos, depersonalisation1and2 and boundary.

4.19.2 Individual/Group Identity Formation Process

The individual/group identity formation process enables the individuals and group to achieve a salient social identity that provides them, individually and as a group, with the greatest social value in any given social environment. The components that make up this process are all associated with the processes of Social Identity Theory and Self-Categorization Theory. The identity formation process is essentially about individuals finding an exclusive place for themselves in their group and a unique place for their group in the social environment enhancing the prestige of the group and their own self-esteem. The manner in which components are related indicates how individuals are able to make this place for themselves in the group. The components group attitudes, self-value, optimal distinctiveness and boundary, along with entitativity and prestige, suggest whether the individuals of the group have found a unique place for themselves in the group and their group has a unique place in the social environment, Table 4.1 shows the different combination of these first four components and the related identities. The identity formation process is, therefore, made up of the following components across the VSM sub-systems; entitativity, prestige, purposefulness, prototypicality, group attitudes, self-esteem, self-value, self-understanding, self-categorization comparative and normative fit, distinctiveness1and2, optimal distinctiveness, in-group favouritism, out-group
derogation. These measure a combination of the degree the group feel that they are united, their social standing, the level of shared purpose, the amount they feel they share an image of the ideal member, the level of shared beliefs, the benefit they feel they gain from group membership, the degree that belonging to the group provides them with meaning, the level of normative behaviour in the group, the harmony, sense of self, and level of ‘them’ and ‘us’.

4.19.3 The Group Cohesion/Coherence Process

The components that make up this process are all those associated with the creation of group cohesion, harmony and coherence. At the lowest level (System 1) the coordinating activities are only self-categorization normative fit, however, the group activity of creating distinctiveness and in-group favouritism or out-group derogation although not scored in this section, should also be recognised as ‘unifying’. The organising processes in System 2 of depersonalisation (harmony and the sense of ‘us’) manage the group norms, activities and rituals to maintain cohesion, while System 3 activities of group synergy (inverse of social conflict) bring the group into line with the group prototype (including group attitudes) and the ideals of the group ethos (System 4 and 5) to achieve cohesion, coherence and synergy. Finally, the shared purposefulness creates the entitativity of the group and brings about closure insulating the group from its environment.

The group cohesion process is, therefore, made up of the following components across the systems; entitativity, closure, ethos, purposefulness, group attitudes, social conflict, algedonic signal (-ve), depersonalisation1 and2, network activity, group resource coordination, self-categorization normative fit. These measure a combination of the degree the group feel that they are united, the amount they feel they are isolated from the environment, the level of shared purpose, the shared beliefs, degree of cohesion, amount of gossip, harmony and sense of ‘us’, network activity, opportunities for development and normative behaviour.

The group cohesion/coherence processes is a fundamental part of a viable system and therefore has components that span the whole system from the transformation activities to the identity processes. Cohesion is achieved through the coordination of activities, social norms and rituals that create group coordination and harmony by aligning an individual’s personal identity to an individual identity or role that is coherent with the group identity. To be coherent the individual identities must support the group prototypicality that binds the group.

4.19.4 Power-Sharing Process

In viable systems each System 1 ‘sub-system’ should attain the maximum autonomy necessary to achieve its purpose and only be constricted in its activities where it is necessary for the ‘purpose’ of the system as a whole. In a social system, therefore,
individuals and sub-groups should not be controlled outside of the prototypicality (group norms, attitudes, rituals and behaviours). Since the need for self-esteem can cause people to seek self-enhancement and self-verification (see Section 2.3) through power and control by using the system for their own ends or constricting others unnecessarily through the use of discipline, power or punishment. The more a group can find methods to share power the more they are likely to remain organisationally closed and retain requisite variety. The power-sharing key-process looks to identify how much control is ‘shared’ around the system by examining the amount people feel they are driven by the same purpose, the lack of rivalry, the ability of people to feel free to join different sub-groups to boost their self-esteem and the amount people feel that opportunities to gain social-value and self-esteem are equitably distributed amongst the group members.

The control of the system, achieved by System 3’s activities, will determine the type of social system that we are dealing with, in a self-constructing social system, that is what we have defined as a purposeful system, the meta-system, and in particular System 3, is achieved through mutual cooperation, action and shared beliefs of the collective; this is known as “self-steering”. In a purposive system individuals will control the meta-system and attempt to steer the organisation.

According to Beer, autonomy is an important factor for viability and interference in the operation system by the meta-system will destroy viability. In a hierarchical organisation, where the levels of recursion reflect the sub-division of the organisation, our VSM will be populated by people. That is people will undertake the functions of System 2, 3, 4 and 5. These individuals, to maintain the integrity and viability of the system have to deal with the emergent properties of the systems below and respect the autonomy of these lower systems. This is a tall order for any human, especially those that seek power or wish to pursue their own self-interest. Power is readily accessible for those controlling System 3, 4 or 5 that manage the resources of the system; and we have seen that people seek to improve their position within a group through self-enhancement. It is easy to see, therefore, that the system can become corrupted very quickly. However, assuming that these people do act in the interests of the system one can easily see the advantage of having people in the higher level systems. These ‘reflective beings’ are able to process the attenuated information from below and respond to system requirements.

“Purposeful collective action, whatever its circumstances, requires the coordination of activities of a diverse and heterogeneous membership. There is, however, an inherent conflict between demands organizations place on the time and efforts of their member and the desire and needs of members when left to their own devices. Thus the age-old dilemma: how to cause members
In a self-steering social system, however, the emergent properties have to be managed by the very people that are generating them at all the lower levels of recursion. The situation is not as simple as it may first seem; even a purposeful system, in which the purpose and identity have been created by the collective, will come under pressure from excessive variety from the environment. This will generate a strong temptation to create an executive who act, for and on behalf, of the people. The degree to which these individuals adhered to the purpose and identity of the system will determine whether or not the system remains purposeful and viable. If the individuals in charge of System 3 are unable to communicate effectively with the sub-systems, they pursue their own agenda, or seek power to control the system, then; the system will become purposive rather than purposeful.

Hobbes's (2010) definition of the Leviathan, in which the collective elect a representative under a covenant to fulfil the symbolic role of the monarch, and in doing so give up significant rights in return for law and order, demonstrates how Hobbes saw the problem of excessive social variety, albeit this solution provides a model that would be unacceptable by today's standards. Hobbes resolves his problem through the application of large amounts of vertical variety; that is control.

Human interaction is subject to the laws of requisite variety just as any other complex system. As the size or complexity of a group grows so it will become impossible for all to communicate with each other. In psychology we see this with Dynamic Social Impact Theory (DSIT). DSIT examines, and attempts to predict, how beliefs and ideas are transmitted through social groups.

Rituals provide a useful way of communicating the values of the group to the many. The purpose of rituals, as reported by King (2011), is to communicate the ethos of the system to the people. This is why symbols, rituals and other social constructs are created by groups to attenuate the variety of ideas and beliefs to those relevant or significant for the group and to find opportunities to amplify them to the largest audience.

Aulin (1984), however, suggests in the Law of Requisite Hierarchy suggests that as social systems become more complex so their ability to manage requires greater decentralisation and autonomy towards the individual units that make up the system.

But a human society is not only a system pursuing survival by means of regulation and control. Any animal community shares this feature as well. What makes the society of men different is its intellectual life and, closely connected with it, the pursuit of freedom, i.e. human emancipation. This is to say that a human
society, though it is also a self-regulating, i.e. surviving system, is above all a self-steering system aiming at an enlargement of its domain of self-steering, i.e. at an increasing freedom of action and thought of its members. Self-steering has, roughly speaking, an inverse relation to hierarchy. The more hierarchy there is in a given system, the less there can be self-steering, and vice versa. In a strictly hierarchical system there are no circuits of feedback, and the system is of the mechanistic, not cybernetic type (c.f. Fig. 1). Conversely, every added circuit of feedback improves the cybernetic qualities of the system, the possibilities of its self-steering par excellence, while it simultaneously reduces the internal hierarchy. (Aulin, 1984, p153)

A complex social system with a limited hierarchy that is pursuing its own agenda will become unviable and fail. Foucault (1975) observers this phenomenon in the changing use of power throughout the ages.

The overriding problem, therefore, is how the collective is able to combine and steer the system, not only in any purposeful way, but also within the requirements of requisite variety? Espejo (2002) suggests that this is through the constitution of autonomous and non-autonomous roles through a process of interactive meaning created through conversation. He argues, however, that frequently people fail to “achieve alignment between the meanings they construct in their informational domain and the organization (identity and structure) they produce in their operational domain”. But how do viable systems stop people in the system from destroying viability as they seek power? Achieving shared beliefs in a self-steering system or for that matter in any system becomes a function of the communications bandwidth.

**Effective citizenship implies effective communications between those representing the subsumed and subsuming organization. Information is not enough; they have to develop communications between them. It is not good enough to allocate resources at a distance nor just be informed about progress on agreed programmes. People at the two levels not only may operate in different places and even at different times but more fundamentally, if true recursion is happening, in different organizations; the subsuming and subsumed primary activities. This fact makes it apparent that what is going on in the subsumed primary activity will remain beyond the experience of the subsuming people unless they develop communications beyond**
information. This is a requirement to avoid communication breakdowns. (Espejo, 1999, p651)

The process of depersonalisation in SIT reduces communications between groups. Depersonalisation creates out-groups and the stereotyping of out-group members. Where there are group boundaries communications is slowed, restricted or in some cases non-existent. This last case occurs particularly when there is social conflict between groups. To ensure groups communicate effectively a strong meta-system identity must be prevalent as well as transparency and trust. Espejo demonstrates the concept of transparency based on Habermas's communicative constituent interests in his RISCOM model of the VSM.

“Beyond cost-efficiency, our organizational activities need legitimacy and authenticity. Performance cannot be only a technical concern, it has to include legitimacy and authenticity as well (Habermas, 1996). And, to make these criteria operational we depend on recursive organizations. Technical efficiency, legitimacy and authenticity apply to all autonomous organizations, that is, to all primary activities. Legitimacy is an assessment made about the grounding of an organization's actions in social norms; are these actions just and fair? In other words, if these actions are aligned with the norms shared by stakeholders they are likely to assess them as legitimate. On the other hand, authenticity is an assessment made about the coherence of an organization's declarations with its observed identity and actions”. (Espejo, 1999, p653)

These issues; the need for effective communications and the need for activities to be legitimate and authentic for a viable social system to operate need to be examined by the model. Espejo also makes a very valid point (ibid), and that is that transparency and trust is needed to 'achieve creative amplification of the corporate policies', that is, it helps to cope with the problem of bandwidth. These properties are not only evident from a systems perspective but also make sense from a Social Identity viewpoint; in Social Identity Theory the legitimacy of any influential group similarly plays an important role in the behaviour of minorities, and that the anonymity of minorities encourages social conflict or strengthens in group favouritism and out group derogation.

Salient Social Identities also seek to establish a coordinated meaning and coherence through better communications, greater transparency and trust;

"Research has also shown that when a social identity is salient people are more likely to accept new ideas from those with whom they identify. This is because group members see each other as
valid sources of information about what the group should do (Turner 1987, 1991). When there is disagreement between people who define themselves as a group, these people are more likely to actively seek to reconcile discordant attitudes and actions (Turner 1987). Through this process there are opportunities for creative disagreement (mutual influence) and the emergence and endorsement of new ideas. In this way, a salient social identity works to improve communication and produce coordinated collective behaviour …this leads to; increased liking for the relevant organizational in-group (Terry and Callan 1998) increased organizational citizenship (Ouwerkerk, Ellemers, and de Gilder 1999), increased willingness to contribute to collective goals (Ellemers de Gilder and van den Heuvel 1998), increased willingness to act together to implement change (Kelly and Kelly 1994; Veenstra and Haslam 2000), greater trust (eg Kramer, Brewer and Hanna 1996), better communication (Dovidio, et al. 1997; Postmes, Tanis and de Wit 2001), improved cooperation (Kramer 1993; Tyler and Blader 2000), increased group productivity (James and Greenberg 1989; Worchel, et al. 1998).” (Eggins et al 2002, p57)

The power sharing process is therefore made up of the components purposefulness, self-esteem, social conflict, social mobility, group resource coordination in order to measure the degree that a group shares purpose, feels good about belonging, is coherent, free and individuals are given opportunity to develop,

4.19.5 The Adaptation Process

Autonomic adaption was discussed in full in Section 4.14, however, while the component [autonomic adaptation] measures the degree that the group members feel the group is able to rapidly react to change in the environment the Adaption key process examines the whole process, attempting to identify how each group is able to change. The adaptation key process is, therefore, made up of the components; closure, model of external environment, planning processes, audit, algedonic signal (-ve), autonomic adaptation, network activity. These measure the degree the group feel that they are isolated from the environment, the amount they socialise the group’s future direction, the level of awareness of inconsistencies in their group norms, the amount of gossip, the ability to autonomically adapt to change and the amount of network activity.
4.20 Creating Viable Social Groups

We have seen how the increasing complexity of social groups forces them to become more democratic to cope with the Law of Requisite Variety (Aulin, 1984) and how the more viable they become the more they have to develop self-steering processes. This implies that they have to clarify identity issues, create coherence, develop mechanisms for recognising threats to their purpose or prestige and adapt to cope with change.

From a psychological perspective the development of these processes would, simplistically, seem to suggest the creation of a focused, robust, adaptable yet ‘viable’ group that would provide more self-worth for its constituents because they are required to ‘wilfully engage’ with it, and ‘wilful engagement’ by its participants is a key to a successful groups (Peters and Waterman 1982, Deal and Kennedy 1982, Ott 1989, Denison 1990, Kotter and Heskett 1992 Bate 1994, Chatman and Cha 2003).

Cybernetics also provides a useful viewpoint from a very human perspective, Espejo, applies the Law of Requisite Variety to the trust that must exist between people in a viable system, he states;

“If these [activities] are based on defining for primary activities what they have to do, in a hierarchical manner, their complexity is being attenuated and the overall outcome is a task that does not get the best out of people in the primary activities. In other words, performance is hindered. On the other hand, if the process is one of responsible trust building, where the primary activities have the opportunity to create their own tasks and to integrate them in the context of the overall task, they will effectively amplify it, by adding their creativity and by aligning their own interests with those of the total organization. Effective citizenship is therefore a truly enabling type of relationship which increases greatly the cohesion and performance of the organization” (Espejo, 1999, p653)

Social Identity has demonstrated how the need to improve social value is one of the driving mechanisms for people and group interaction; in particular, the prestige that a person derives from group membership plays an important part in their desire to participate. This raises the question, would people prefer to belong to a ‘purposive’ group with high prestige or a viable ‘purposeful’ group with lower prestige? Empirical evidence shows that people-to-culture ‘fit’ is related to commitment, and social integration (Finegan 2000; Verquer et al 2003), turnover (Chatman 1991; O’Reilly et al 1991; McCulloch, 2001) and, most significantly, value and goal congruence (Adkins et al 1996). Slattery et al (2010) show that commitment of both full and part time staff is related to “the extent to which their jobs are
high in skill variety, task identity, task significance, autonomy, and feedback”. Together, these suggest that people seek ‘high prestige’ through ‘wilful and purposeful engagement’ in other words they want both high prestige and purposefulness, and that they will have more chance of finding these if they are part of a ‘viable’ system. These leads us to develop measures in the model to assess the purposefulness of the groups researched. That is the degree that power is shared.

The above discussion would suggest a means of examining the interaction of individuals with the group to assess the type of group that is formed. The suggestion is that the components of prototypicality, boundary, self-value and optimal distinctiveness are important factors that interact to shape the nature of the group. Prototypicality, that is the shared image and opinions of the ideal group member drives the normative behaviour of the group while boundary gives the degree of availability of the group to new members i.e. its exclusivity. Self-value measures the degree that the members feel they gain benefit from their membership and optimal distinctiveness shows the amount they feel they retain an element of personal identity. These factors all contribute to determining what type of group is being examined with the following logic.

Firstly, if the value for group attitudes and boundary are high then the group members are reporting that the group identity has a strong prototypicality and is strongly exclusive, in other words it is an ‘elite’. If the value for group attitudes is high but boundary is low, then there is a strong group prototype but the group is open to those that wish to join and so is considered an association. A weak but exclusive prototypicality will be a clique, or artificially maintained identity while a weak and open prototypicality will be an assembly. The scores for self-value and optimal distinctiveness will suggest how individuals in these groups have engaged with the other members. Those that have found a unique place for themselves, indicated by a high score for self-value, and feel that they are ‘themselves’ i.e. reporting a high score for optimal distinctiveness, will most likely have developed an individual identity i.e. they are ‘in’ with the ‘in-crowd’. This is exactly Stafford Beer’s “convergence of purpose” – the perfect level of autonomy for System 1. Those who do not feel ‘themselves’ will have inherited a role or identity in the group and are demonstrating evidence of greater vertical variety control. Those who do not have a high score for self-value but feel ‘themselves’ are reporting that they are only affiliated to the group and most likely have inherited an identity within it. Those members who report that they are not ‘valued by the group’ and not ‘themselves’ in the group are reporting that they are ‘outside’ or ‘disengaged’ from the group.
Table 4.1 – Personal, individual and group identity formation from the components, group attitudes (prototypicality), boundary, self-value and optimal distinctiveness

<table>
<thead>
<tr>
<th>Prototypicality (group attitudes)</th>
<th>Boundary</th>
<th>Self value</th>
<th>Optimal distinctiveness</th>
<th>Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>strong</td>
<td>exclusive</td>
<td>high</td>
<td>aligned</td>
<td>in &amp; aligned with an elite, elite individual identity</td>
</tr>
<tr>
<td>strong</td>
<td>exclusive</td>
<td>high</td>
<td>unaligned</td>
<td>in but not aligned with an elite, elite individual identity</td>
</tr>
<tr>
<td>strong</td>
<td>exclusive</td>
<td>low</td>
<td>unaligned</td>
<td>affiliated member of an elite, affiliate inherited identity</td>
</tr>
<tr>
<td>strong</td>
<td>open</td>
<td>high</td>
<td>aligned</td>
<td>in &amp; aligned with an association, associate individual identity</td>
</tr>
<tr>
<td>strong</td>
<td>open</td>
<td>high</td>
<td>unaligned</td>
<td>in but not aligned with an association, associate inherited identity</td>
</tr>
<tr>
<td>strong</td>
<td>open</td>
<td>low</td>
<td>aligned</td>
<td>affiliated member of an association, affiliate inherited identity</td>
</tr>
<tr>
<td>weak</td>
<td>exclusive</td>
<td>high</td>
<td>aligned</td>
<td>in and aligned with a clique, clique individual identity</td>
</tr>
<tr>
<td>weak</td>
<td>exclusive</td>
<td>high</td>
<td>unaligned</td>
<td>in but not aligned with a clique, clique inherited identity</td>
</tr>
<tr>
<td>weak</td>
<td>exclusive</td>
<td>low</td>
<td>unaligned</td>
<td>affiliated member of a clique, affiliate clique personal identity</td>
</tr>
<tr>
<td>weak</td>
<td>open</td>
<td>high</td>
<td>aligned</td>
<td>in as self, engaged personal identity</td>
</tr>
<tr>
<td>weak</td>
<td>open</td>
<td>high</td>
<td>unaligned</td>
<td>valued for self but disinterested, non-responsive personal identity</td>
</tr>
<tr>
<td>weak</td>
<td>open</td>
<td>low</td>
<td>aligned</td>
<td>not valued and disinterested, disengaged personal identity</td>
</tr>
</tbody>
</table>

4.21 Pathologies of Viable Systems

We have seen how Beer defines viability and its construct but what causes a system to be un-viable and to fail? Yolles provides an overview;

“Pathologies occur when individuals and groups in a social system are prevented from autonomously regulating their collective existence in a way that opposes their capacity to be viable. So pathology is important to understanding why particular types of behaviour are manifested, and how they may be dealt with where they represent important degrees of ill-health or conditions of unfitness”. (Yolles, 2008, p2)

The most frequent pathologies of a viable system are listed by Stafford Beer in his paper The Viable Systems Model: Its Provenance, Development, Methodology and Pathology (1984) (amended to remove management references);

- Is it a viable system? If any of Beer’s five functions are removed from any level of recursion then its abilities to operate will diminish. This includes the autonomy of sub-systems.

- Does subsystem Five truly represent the entire system within the context of larger, more comprehensive and more powerful systems?

- Do people understand the need for subsystems Two and Four? If Two is missing, activity in One can turn deadly and self-defeating as units fight for resources and against entropy; if Four is missing. Three and Five can collapse into each other, leaving the critical Five subsystem a mere functionary.
• Do the Three, Four and Five subsystems need to form a Three-Four-Five subsystem to encourage ‘synergy’ and interactivity? Without a constant interaction and exchange of information between these three functions, Three is vulnerable to ‘narrow tunnel’ syndrome and Four is exposed to the perils of ‘flights of imagination’.

Can we relate these to our model of human social behaviour?

The first point establishes much of what we have already discussed, that is without all the elements of viability the group fails to maintain its identity. The key aspect of autonomy, which Beer singles out, is the issue discussed with Social Identity; that is the need for groups to seek out distinctiveness from other groups and at the individual level the need for people to maintain optimal distinctiveness (Brewer 1991, 1993) in group formation.

The second point and third points suggest that groups need a clear and cohesive meta-identity to bring them together and without it they will revert to ‘tribal conflict’.

The last point demonstrates the need for cohesion in the meta-system.

There is a further pathology that is mentioned by Beer (1979, p. 410) and that is pathological autopoiesis. He defines this as “…any viable system that devoted more time that this constant proportion of time to autopoiesis could be declared to be pathologically autopoietic.” The constant he refers to is that effort and time required to maintain the system.

4.22 Summary of Chapter

This chapter identified the processes of Social Identity Theory and mapped the state-space of social groups. The chapter then applied the processes to the Viable Systems Model, starting with the transformations in System 1. At each stage the chapter detailed the components that would be used to measure the viability of the social groups the researched. As well as the transformations for System 1 the chapter covered the System 2 cohesion process, the System 3 coherence and synergy processes, the audit system of System 3* and the adaptation process. Following this the chapter discussed System 4 and 5 activities before completing with an examination of the power sharing process.
CHAPTER 5 – RESEARCH METHODOLOGY

5.1 Aim of the Chapter
The aim of this chapter is to complete the research design started in chapter 4 with the research methodology; clarifying how the theory was translated into research. It states the research objectives and propositions and identifies the variables used. It then proceeds to lay out the conduct of the research including the pilot study, questionnaire and semi-structured interviews and it discusses key issues surrounding the work such as validity, reliability and ethics permission.

5.2 Paradigm, Approach, Strategy and Design
Chapter 3 identified that the research was feasible under a structuralist paradigm with a pragmatist philosophy and dialectic argument using abductive, deductive and inductive reasoning in a synthesis with a multi-strategy sequential explanatory fixed design. Chapter 4 identified the components that will form the basis of the data collection for a ‘snapshot’ of complex social systems, groups, being studied.

5.3 Research Objectives
- To identify a research paradigm and approach necessary to address the research question.
- To create an influence map of the psychological activities of social group behaviour from Social Identity Theory.
- To utilize the systems map of social identity psychological activities to develop a Viable Systems Model of social groups with salient identities.
- To develop a research design, consistent with the research philosophy, approach and strategy, to examine the research question.
- To conduct research and assess the validity of the model to identify viable groups with salient social identities.
- To identify if any groups with salient social identities can be assessed by the model as viable systems and if possible to assess which factors affect the development of viability in groups with salient social identities.
5.4 The Research Propositions

- The viability of a group with a salient social identity can be understood through the VSM

- A social group with a salient identity will only become viable when it has a high level of salience to its members.

- A viable social group with a salient identity will have the following characteristics of the VSM systems at the group level of recursion;
  
  o A System 5, represented by components entitativity, closure, ethos, prestige, purposefulness and symbols that represent the ideal of ‘identity maintenance’.

  o A System 4 that monitors and manages the ‘outside and then’ represented by the components of an external model of the social environment, an internal model of membership (prototypically and group attitudes) and the group potential of planning processes.

  o A System 3 that monitors and manages the ‘here and now’ represented by components of shared organising and managing processes to achieve social value in self-esteem, self-value, self-understanding, and social coherence (reverse scored as social conflict).

  o A System 3* that sporadically audits System 1 activities to monitor group prestige, potential threats to group status and group understanding by utilising ‘gossip’ to provide a channel for an algedonic alert to System 4-5 and autonomic adaptation with System 3 and 2.

  o A System 2 that creates cohesion by coordinating System 1 activities to create group harmony by the depersonalisation of individual identity and maintenance of network activity and shared group resource/social mobility development opportunities for group members.

  o System 1 activities to achieve attenuation and amplification of complexity and group boundaries through; self-categorization comparative and normative fit to achieve distinctiveness through the identity enhancing behaviours of in-group favouritism and out-group derogation while maintain individual optimal distinctiveness.

- The viability of a group can be determined by the strength of its prototypicality (and/or group attitudes) its entitativity, purposefulness, coherence, cohesion
(depersonalisation), level of distinctiveness and degree of self-categorization measured as components.

5.5 Research Hypotheses

Social groups can only become *self-producing autopoietic* social systems and achieve an *autopoietic take off* when they develop a high identity salience, as defined in the research propositions above, through high levels of *self-categorization normative fit, depersonalisation* (a sense of ‘us’), *group coherence* and *group attitudes* and are operationally closed from their environment.

5.6 Mixed-Strategy Design

A mixed-strategy design was with quantitative data collected to determine the components of the main data while a qualitative study using semi-structured interviews will provide a means to triangulate, complete, offset, explain, illustrate and refine the results. Robson, (2011, Kindle 4499) suggests that “ideally this kind of research calls for well-trained and experienced investigators”, therefore training focus group management was undertaken and a pilot study undertaken before commencing the research.

5.7 Data Acquisition

The data was collected in the Chichester area of West Sussex by questionnaire and *semi-structured* interview. Overall 103 groups in a wide spread of different organisational and social environments were approached, of these 18 responded providing a total of 100 questionnaires to provide the quantitative data. Each group also undertook a *semi-structured* interview that provided qualitative data. The groups interviewed varied from individual representatives to collections of 24 people. Of the 100 questionnaires returned 9 had one or more missing answers, only one had no answers.

The intention was to ensure that groups were sampled from as broad a range of social environments as possible but for all of them to be in the SE of the United Kingdom to reduce issues of country, culture and language. The group types were therefore all constituted from people with a similar background and while this simplified the research and enabled the questions to be tailored to people from this area it raises the issue of the generalization of the finding across different cultures. Sampling of groups within the area was done from an internet search of group types under five different categories; business groups, social groups, religious groups and institutions using the quota sampling technique (Saunders et al, 2009, p235). See Appendix 2 Section 2.5 Table 2.1 for details of sampling plan.

The initial approach to many organisations was made by correspondence, either letter or email; however, this had a very poor success ratio. Thereafter, a face-to-face methodology was tried with greater success (Saunders et al, 2009, p324). The pilot group had suggested
improving this face-to-face methodology with a social exchange by providing snacks as people filled in the questionnaire and answered the questions. Incentive is seen as a high impact strategy for raising response rates (Saunders et al, 2009, p 396) although financial rewards are unethical.

The protocol for the interview and questionnaire completion were important, following Yin (2009, p 80) and Saunders et al (2009, p 326). For every group interviewed the importance of context was explained, frequently groups wanted to take the questionnaire home rather than complete it in the group setting; however, strong evidence from Social Identity Theory (Haslam et al, 1999) shows that context is necessary to make the group’s identity salient. Interviewing each group in its environment, such as its place of work, meeting place, office or business area was necessary to invoke the correct identity and get the correct response on the questionnaire.

After the introduction it was explained to the group that while the questionnaire elicited individual answers from the group, the semi-structured interviews were usually looking for group consensus on the examined subjects. Therefore, the expression “can we agree on an answer” was frequently to be used in eliciting a response during the semi-structured interview, however, it was often the case that individuals had different responses and when this was encountered all answers were recorded. Since the semi-structured interviews elicited a consensus it was necessary to conduct the questionnaire prior to any discussion to prevent peoples’ answers from being ‘framed’ by the interchange. However, since it was important to set the context for the questionnaire to ensure that the group Identity was salient the first five questions (up to “if we are us who is them?”) of the qualitative semi-structured interview were asked before the questionnaire, while the rest were asked on its completion. The semi-structured interviews were based around the critical incident technique (Saunders et al, 2009, p332) that asked for examples whenever possible to ensure that answers were relevant and based on evidence. Interviews were recorded and notes made to improve the reliability of the data (Saunders et al, 2009, p334).

Despite running a pilot study several questions had to be explained to people as they were completing the questionnaire as it became clear, during the course of the research, that the meaning of some of the questions was too obscure. The research was examining aspects of people’s lives that they were often unaware of. The abstract nature of the subject being researched; identity, boundaries and particularly group norms required careful questioning to ‘tease out’ the areas of interest without leading the interviewees. In a new subject areas this is an ‘on-going learning experience’ and despite the pilot study new insights were being discovered all through the interviews. In several cases it was discovered that indirect questions sometimes uncovered the answers more effectively than direct questions, for instance; in determining the level of group norms asking the group directly “what are your group norms?” was normally met with no response, while asking people “what made you feel
uncomfortable when you first joined" proved effective in identifying where group norms differed from social norms. People appear to adjust to group norms sub-consciously and once established in the group find it hard to identify normative behaviour. To overcome these problems, professional help was requested to provide focus group training prior to the start of the research.

5.8 Pilot Study

A pilot study focus group was conducted partly for training and partly to identify any issues with the questionnaire or semi-structured interview. The focus group did not feel that a Likert Scale worked well with the questions and put forward suggestions for change (Saunders et al, 2009, p374), they were also concerned about the time it took to complete the questionnaire because of the number of questions and the semi-structured interview process. These were refined but still remain an issue. Further work needs to be done to simplify the process of data acquisition.

5.9 Questionnaire

The questionnaire as part of the multi-strategy design asked investigative questions that provided rating category data that could be defined by ranked ordinal variables. To do this the research focused on pre-coded closed questions (Saunders et al, 2009, p374) that provide greater explanation than that provide by the Likert-scale. The pilot study focus group was used to determine the pre-coding questions and answers. The questions and pre-coded closed ranked answers are shown in Table 5.2.

5.10 Semi-structured Interview

The semi-structured interview follows Saunders et al (2009, p320). The design is shown in Table 5.6, this details the questions asked, the purpose behind each question and the related components. Appendix 2 has a full breakdown on the qualitative data and its analysis by group-id and group-type. The semi-structured interview will also be used to measure the salience and the organisational closure of the group identity.

5.11 Variables

The questionnaire asked 33 questions which corresponded to the different components identified in Chapter 4 that were considered to constitute a Viable System within the social identity framework (prototypicality, self-categorization, depersonalisation and distinctiveness all had two questions). Tables 5.1 and 5.2 detail the dependent and independent variables used.

Variables (A), (B) and (C) provide the detail of the individual, group and group type; (A). Group-id – The group each individual belongs to, (B). Name of individual – kept confidential,
(C). Group-type – The type of group that each individual belongs to (Business, Social, Religious, Institution, Charity)

Variable (D) is the Role Code, that is a designation of any role undertaken by the group member as either; member, supervisor or manager.

Variables (E) and variable (2) designate the membership time of a group member and the age of the group from its earliest recorded beginnings.

Variable 1 is the main dependent variable as the viability of the group-id

The principle dependent variable for the research, viability, has no known direct measures, however, the following variables were used to test for correlations with the final averaged viability score from the quantitative data; age of group and length of membership time.

The component scores from the questionnaire are averaged by VSM system type to provide variables that are dependent on the main component scores;

- Individual’s component score.
- Group-id component score
- Group-type component score
- Individuals VSM System (1 to 5) score
- Group-id VSM System (1 to 5) score
- Group-type VSM System (1 to 5) score
- Group-id mean – The average of average VSM System score for each group as a total measure of viability.
- Group-type mean – The average of average VSM System score for each group-type as a total measure of viability.

Strength of identity salience and organisational closure are independent variables determined from the interviews.
Table 5.1 - List of Variables and Components

<table>
<thead>
<tr>
<th>No</th>
<th>Variable Name</th>
<th>Dependent</th>
<th>Explanation</th>
<th>Variable Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Group Id</td>
<td>Number</td>
<td>Number designator</td>
<td>Catagorial</td>
</tr>
<tr>
<td>B</td>
<td>Name Id</td>
<td>Group name</td>
<td></td>
<td>Catagorial</td>
</tr>
<tr>
<td>C</td>
<td>Group Type</td>
<td>Business,</td>
<td></td>
<td>Catagorial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>social etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Role Code</td>
<td>Manager,</td>
<td></td>
<td>Catagorial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Membership time</td>
<td>Independent</td>
<td>The length of time the interviewee has been a part of the group</td>
<td>Continuous</td>
</tr>
<tr>
<td>F</td>
<td>Group Salience</td>
<td>Independent</td>
<td>The relevance and strength of group id</td>
<td>Catagorial</td>
</tr>
<tr>
<td></td>
<td>Group Autonomy</td>
<td>Independent</td>
<td>The degree of insulation from the environment</td>
<td>Catagorial</td>
</tr>
<tr>
<td></td>
<td>(organisational closure)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Viability</td>
<td>Dependent</td>
<td>The ability to maintain the identity of the group</td>
<td>Continuous</td>
</tr>
<tr>
<td>2</td>
<td>Age of Group</td>
<td>Independent</td>
<td>Length of time the group has been in existence</td>
<td>Continuous</td>
</tr>
<tr>
<td>3</td>
<td>Size</td>
<td>Independent</td>
<td>Size of the group</td>
<td>Discrete</td>
</tr>
</tbody>
</table>
### Table 5.2 – List of Variables, Components and Ranked Answers

<table>
<thead>
<tr>
<th>Var No</th>
<th>Question No</th>
<th>VSM System</th>
<th>Component</th>
<th>Description of component</th>
<th>Variable type</th>
<th>Question</th>
<th>Ranked answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>System 5</td>
<td>Entitativity</td>
<td>The degree that people feel their group has an identifiable unity</td>
<td>Ranked - Interval</td>
<td>In relation to other comparable groups do you feel your group is…</td>
<td>5=Close knit, 4=Very united, 3=United, 2=Hardly united at all, 1=Divided</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>System 5</td>
<td>Closure</td>
<td>The degree that outside influences are able to impact on the identity, purpose and processes of the group</td>
<td>Ranked - Interval</td>
<td>Could you image any single event that would easily close down or severely disrupt your group?</td>
<td>5=Not at all, 4=Very little, 3=Sometimes, 2=All the time, 1=Outside events control us</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>System 5</td>
<td>Ethos</td>
<td>The degree people feel that there are 'guiding beliefs and ideals' that characterize the group</td>
<td>Ranked - Interval</td>
<td>Our group has …</td>
<td>5=Strong beliefs and ideals, 4=A clear group ethos, 3=Distinctive character, 2=Some beliefs, 1=We don't believe in much out of the ordinary</td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>System 5</td>
<td>Prestige</td>
<td>The degree that people feel the group has high status</td>
<td>Ranked - Interval</td>
<td>What status does your group have in relation to comparable groups</td>
<td>5=We are known as the best, 4=People admire us, 3=Above average, 2=We are ok, 1=Very low</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>System 5</td>
<td>Purposefulness</td>
<td>The amount people feel that they have a say in what the group stands for</td>
<td>Ranked - Interval</td>
<td>How much say do you have about what the group stands for?</td>
<td>5=Yes, we all have a say all the time, 4=We have a say but not all the time, 3=We rarely have a say, 2=A few decide what we stand for, 1=One person holds the power to say what we stand for.</td>
</tr>
<tr>
<td>#</td>
<td>Name</td>
<td>System</td>
<td>Component</td>
<td>Description</td>
<td>Interval</td>
<td>Question</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>9</td>
<td>11</td>
<td>5</td>
<td>Symbols</td>
<td>Are there strong symbols of shared group belief, leadership and myths</td>
<td>Ranked - Interval</td>
<td>Does your group have leadership, symbols and myths that represent your beliefs?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=Yes very strong ones, 4=Yes, 3=Some, 2=Hardly any, 1=No - none at all</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>13</td>
<td>4</td>
<td>Prototypicality</td>
<td>The degree that there is a shared model of an ideal group member</td>
<td>Ranked - Interval</td>
<td>Close your eyes and see if you have an image of a perfect group member (it might be an actual person or a caricature)</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>5=Yes I have a very clear image, 4=Yes I can see an image, 3=I see only the traits that they must have, 2=I don't have an clear image, 1=No none at all</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>15</td>
<td>4</td>
<td>Group attitudes</td>
<td>The degree of shared group opinions</td>
<td>Ranked - Interval</td>
<td>Do you share attitudes with the other member of your group</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=Yes all the time, 4=Most of the time, 3=More often than not, 2=Sometimes, 1=Not at all</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>4</td>
<td>Model of external environment</td>
<td>The degree to which people feel that there is a shared understanding of the world around their group.</td>
<td>Ranked - Interval</td>
<td>Do you feel that your group understands how the world around it operates - is it in-tune with its environment?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=Yes all the time, 4=Most of the time, 3=Often, 2=Occasionally, 1=The world is a complete mystery to us</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>14</td>
<td>4</td>
<td>Planning processes</td>
<td>The degree of innovation, anticipation and forethought in the group</td>
<td>Ranked - Interval</td>
<td>Do you and your group actively discuss plans for the group's future?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=Yes we socialise plans all the time, 4=We discuss plans when we need to, 3=Sometimes we discuss plans, 2=Not very often, 1=Not at all</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>16</td>
<td>3</td>
<td>Self-esteem</td>
<td>The degree that people feel they gain self-esteem from belonging to the group?</td>
<td>Ranked - Interval</td>
<td>Do you feel good about belonging to your group?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=Yes a lot, 4=Yes, 3=Sometimes, 2=Not really, 1=No not at all</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>17</td>
<td>3</td>
<td>Self-value</td>
<td>The degree that people feel valued by the group for their</td>
<td>Ranked - Interval</td>
<td>Do you think you are valued by the other members of the group</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=Yes a lot, 4=Yes, 3=Sometimes,</td>
<td></td>
</tr>
</tbody>
</table>
|   |   |   | unique contribution | for a unique contribution | 2=Not really,  
1=No not at all |
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>18</td>
<td>System 3</td>
<td>Self-understanding</td>
<td>The degree that belonging to the group provides meaning</td>
<td>Ranked - Interval</td>
</tr>
</tbody>
</table>
|    |    |    | 5=It's my life,  
4=I love it,  
3=I like it,  
2=It's just a pastime,  
1=I don't really know |
| 17 | 33 | System 3 | Social conflict  
Social creativity | The degree of legitimacy of the dominant group or leadership and the need to either change identity or act | Ranked - Interval | Is this high status group legitimate? |
|    |    |    | 5=There is no high status group,  
4=The group is legitimate, honest and fair,  
3=The group is legitimate I have to accept that,  
2=They misuse their power but I have to live with it,  
1=They misuse their power and I rebel against them |
| 18 | 21 | System # | Audit | The speed and accuracy that problems in the group are identified, including the behaviour of people who act outside the accepted norms for the group | Ranked - Interval | Does your group recognise when things are going wrong and when people do not behave according to the group rules? |
|    |    |    | 5=Yes very quickly,  
4=Yes quickly,  
3=Yes often,  
2=Sometimes,  
1=No never |
| 19 | 22 | System # | Algedonic signal | How much do people 'gossip' about what goes on in the group. | Ranked - Interval | Do people 'gossip' about what goes on in the group. |
|    |    |    | 5=All the time,  
4=Most of the time,  
3=Often,  
2=Occasionally,  
1=No never |
| 20 | 23 | System # | Autonomic adaptation | The amount the system can adapt. Does the group make changes when | Ranked - Interval | How readily does the group adapt when something goes wrong |
|    |    |    | 5=Yes very quickly,  
4=Yes quickly,  
3=It reacts,  
2=Not very fast,  
1=No never |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>something good or bad happens?</th>
<th></th>
<th>1=No - it does not respond</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>24</td>
<td>System 2</td>
<td>De personalisation 1</td>
<td>The degree of harmony in the group</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>22</td>
<td>31</td>
<td>System 2</td>
<td>De personalisation 2</td>
<td>The degree that people feel and act as if they are one with the group</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>23</td>
<td>27</td>
<td>System 2</td>
<td>Network activity</td>
<td>The degree that people socialize and affiliate across the group</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>24</td>
<td>32</td>
<td>System 2</td>
<td>Social mobility</td>
<td>The ability of out-group members to join the high status</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>25</td>
<td>20</td>
<td>System 2</td>
<td>Group Resource Coordination</td>
<td>The degree that people feel that resources (opportunities for self-esteem - social value and self-understanding) are shared for the benefit of the group</td>
<td>Ranked - Interval</td>
</tr>
</tbody>
</table>

1=We all fight all the time, 2=There are a lot of disagreements, 3=Sometimes there are disagreements, 4=Most of the time we all agree, 5=Yes there's always agreement.

1=Not at all, 2=Not really, 3=Pretty much, 4=Yes generally, 5=Yes without a doubt.

1=Never, 2=Not a lot, 3=As much as I can, 4=A lot but only with the people I know, 5=A lot across the whole group.

1=No never, 2=Occasionally, 3=Often, 4=Most of the time, 5=All the time.
<p>| | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>29</td>
<td>System 1</td>
<td>Self-categorization collaborative fit</td>
<td>The degree that individuals feel they have more in common with group members than people from other groups.</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>27</td>
<td>28</td>
<td>System 1</td>
<td>Self-categorization normative fit</td>
<td>The degree that individuals feel they 'fit' the group's values and beliefs</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>28</td>
<td>4</td>
<td>System 1</td>
<td>Distinctiveness 1</td>
<td>The degree people feel their group is distinct from other groups</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>29</td>
<td>30</td>
<td>System 1</td>
<td>Distinctiveness 2</td>
<td>The degree that people feel they actively try to make their group different from other groups</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>30</td>
<td>19</td>
<td>System 1</td>
<td>Optimal distinctiveness</td>
<td>The degree that people feel that they retain a sense of self</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>31</td>
<td>25</td>
<td>System 1</td>
<td>In-group favouritism</td>
<td>The degree that positive attributes are assigned to people in the group compared to those outside</td>
<td>Ranked - Interval</td>
</tr>
<tr>
<td>32</td>
<td>26</td>
<td>System 1</td>
<td>Out-group derogation</td>
<td>The degree to which negative attributes are assigned to people in</td>
<td>Ranked - Interval</td>
</tr>
</tbody>
</table>

5=Yes without a doubt, 4=Yes generally, 3=Pretty much, 2=Not really, 1=No not at all
<table>
<thead>
<tr>
<th>ID</th>
<th>Group</th>
<th>System</th>
<th>Boundary</th>
<th>Ranked Interval</th>
<th>Trusting of people and information coming from these groups?</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>7</td>
<td>System 1</td>
<td>Boundary</td>
<td>Ranked Interval</td>
<td>2=Not really, 1=No they are no different</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Are there clear boundaries for group membership</td>
<td>Is it clear who is in the group and who is out?</td>
<td>5=Yes - it's a clique, 4=There are clear rules, 3=It helps if your face fits, 2=Not really, 1=There are no rules for membership.</td>
</tr>
<tr>
<td>Name</td>
<td>Components</td>
<td>Questions</td>
<td>Purpose of question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>-----------</td>
<td>--------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WHOS_US</td>
<td>meta-system</td>
<td>Who is us?</td>
<td>Who is us?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WHEN_SALIENT</td>
<td>meta-system</td>
<td>When do you associate with this group?</td>
<td>When is 'us' salient...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>METAGROUP</td>
<td>meta-system</td>
<td>Does this group represent the whole of 'us' or are you just a part?</td>
<td>Level of recursion of group...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PURPOSE</td>
<td>self-categorisation collaborative fit, prototypicality</td>
<td>What do 'we' do?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCIAL_VALUE</td>
<td>social value</td>
<td>Are you valued by the group for a unique contribution? What is it?</td>
<td>Are you valued and how...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOSTHESM</td>
<td>in-group favouritism, out-group derogation, distinctiveness</td>
<td>If we are 'us' who is 'them'?</td>
<td>Who does the group see as an out-group...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIFFTHEM</td>
<td>in-group favouritism, out-group derogation, distinctiveness</td>
<td>How do we differ from them?</td>
<td>How is the group different from them...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROTOTYPE</td>
<td>prototypicality</td>
<td>Is there a typical member of the group – give me an example?</td>
<td>What is the group prototype...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUP_VALUE</td>
<td>entitativity, purposefulness</td>
<td>How do others see you group – are you respected or ignored - How is your group unique? &quot;Do you play a part in the running of the group?&quot;</td>
<td>What is the group value...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID_STRENGTH</td>
<td>meta-system</td>
<td>Summary of identity strength...?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORMATIVE</td>
<td>self-categorisation normative fit, depersonalisation, group attitudes, ideals</td>
<td>When you joined the group what made you feel uncomfortable? What made you feel like you didn't fit? Generally do new joiners fit in easily or with difficulty?</td>
<td>Is there evidence of normative behaviour...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COHERENT</td>
<td>social conflict, depersonalisation, network activity, algedonic signal</td>
<td>Do you feel that you are a coherent group that actively works together as one? How much harmony is in the group? Are we aligned with who we are and what we do? Is there transparency and trust?</td>
<td>Are the individuals coherent as a group...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SELF_ESTEEM</td>
<td>self-esteem and prestige</td>
<td>Does belonging to the group make you feel good about yourself – are you proud of it – give me an example?</td>
<td>How much self-esteem is achieved...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDEALS</td>
<td>entitativity, closure, ethos, purposefulness, group attitudes</td>
<td>Do you believe in - give me an example?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEADER</td>
<td>entitativity, ethos, prestige, symbols</td>
<td>Who or what do you follow...?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALIGNED</td>
<td>meta-system</td>
<td>Is the group coherent with its parent organisation...?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID_OWNERSHIP</td>
<td>purposefulness, self-esteem, social conflict, social mobility, group resource coordination</td>
<td>Who says what happens in this group? Who holds power – who ought to hold power? Why do some have a higher status? Could you become a member of the higher status group? Is it about power sharing or something else?</td>
<td>Who owns the group/meta-group identity...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLOSURE</td>
<td>entitativity, closure, ethos, prestige, depersonalisation, self-categorisation, boundary</td>
<td>Is what happens in this group isolated from the real world?</td>
<td>Has the group achieved a degree of closure...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADAPTABILITY</td>
<td>closure, model of external environment, planning processes, audit, algedonic signal, adaptation, network activity</td>
<td>What do you 'gossip' about? Does your group react and change - Can you think of any way that your group has changed since you joined?</td>
<td>How well does the group adapt...?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLANNING</td>
<td>model of external environment, model of prototypicality, planning processes, group attitudes</td>
<td>Do you discuss the way forward for your group – not just your organisation but your group? Who decides the way forward – give me an example?</td>
<td>How does the group plan ahead...?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.12 The Criteria for Interpreting the Findings

From the research hypothesis it was anticipated that the quantitative data would demonstrate the highest score for the components averaged by VSM System from those groups with greatest age of group. Viability could also be triangulated, from the qualitative data with the components averaged by key-process and with the qualitative data. Those groups who demonstrate a significantly diminished score in any ‘system area’ would be regarded as missing that key attribute and be ‘unviable’ despite their average score and they should not be included in the viability – age correlation.

The groups of particular interest would be those who demonstrated;

- High viability scores in the quantitative study correlated with high age scores (viable systems)
- Low viability scores in the quantitative study correlated with low age scores (non-viable systems)
- Low viability scores in the quantitative study correlated with high age scores (non-viable systems that have survived and need to be explained – these falsify the hypothesis).

5.13 Analysis of Data

The methodology used to analyse the data was derived from Barton and Haslett’s (2007) analysis of the scientific method that used inductive, deductive and abductive reasoning to produce both an analysis and synthesis of the data.

Starting at the level of the individual the components scores were averaged by group-id and then again by group-type. These scores were again combined at group-id and group-type levels but by VSM System. A similar processes was undertaken at each level to produce the scores for the key-processes.

Starting at group-id level the data was then examined for patterns and correlations that could provide what Barton and Haslett call a ‘surprising fact’. Then, using abductive reasoning a hypothesis was generated about its significance. A pattern recognised in any one of the component, VSM System or key-process groups was then synthesised with the other groups and at different levels i.e. group-type, to determine its meaning in relation to the whole.

Following this a detailed “action and analysis” was used to categorise the phenomenon into ‘sub-meanings’ based on the new understanding developed of its significance. In the analysis of these new categories and sub-categories new patterns and correlations may emerge and a new ‘surprising fact’ discovered and the process started again.
An example of this process was the ‘surprising fact’ that while the component optimal distinctiveness did not correlate strongly with many other components it did act as a moderator between the components prototypicality (group attitudes), boundary and self-value, leading to strong correlations when combined with their data. This led to the hypothesis, shown in Section 4.2 and at Figure 4.1 that there is a relationship linking the image/attitudes of the group with its exclusivity, the appreciation that people feel from others in the group and their need to retain a ‘sense of self’. Analysis of this relationship led to the categorisation of groups as ‘elites’, ‘associations’, ‘cliques’, or ‘affiliates’. These conclusions were derived from repeated iterations of the data at several levels of group-id and group-type to recognise the ‘meaning’ achieved.

In a similar manner the correlations between the two components ethos and purposefulness with membership time and age of group suggested that these were key indicators of a group’s ‘maturity’ and, by implication, viability. This lead to an analysis of groups ‘maturity’ at several levels and a recognition that the formation of ‘normative behaviour’ was also a key parameter in this categorisation. Further synthesis of data at group-id and group-type levels and inclusion of the qualitative data led to confirmation that this was a critical factor in the understanding of groups’ viability.

The main focus of the research, the understanding of viability in social groups through the use of the method of abstraction, induction and deduction was mainly achieved in the study through investigating the research ‘hypothesis’ that groups become viable when they develop a strong identity salience, see Section 5.5. This ‘hypothesis’ originated from the ‘surprising fact’ that emerged from initial observations of the researcher into Social Identity and VSM Theory that ‘social groups with salient identities group be viable groups’ and developed during the exploration of its meaning through the synthesis of the quantitative data by component, VSM System or key-process categories at group-id and group-type levels. It was further synthesised be relating it to the qualitative data and finally analysed to categorise the results by the invariances common to group-types. Although presented here as a straight forward narrative for clarity in fact the results were achieved through many iterations of observation of invariance, hypothesis, meaning development, confirmation, and categorisation.

5.14 Validation of past use of the VSM

As a final validation of the research design this section compares past use of the VSM for theory development with the methodology to verify its applicability.

Beer used the VSM to advance Managerial Cybernetics and the study of organisation. He developed it from the human neurological system in Brain of the Firm (1972) and since its conception it has been used extensively for the study of organisations.
Mingers (2000) provides a list of 6 research projects with the VSM that demonstrate its practical application. These range from using the VSM to model San Francisco Zoo, municipal organisations, restructuring projects and change management to developing information systems strategy or Fouzi M. Ben-Ali’s (2011) structural design of a national youth and sports information system.


While there are many more examples of the application of the VSM to organisation, the basis on which it was formed, the Literature Review demonstrated that at its heart the VSM can model any self-reflective viable systems and could therefore be used for the development of many theoretical studies, for instance the study of language or of human perception and to validate the research design comparisons need to be made with instances when the VSM has been applied to theory development particularly with groups, sociology or psychology.

Stokes (2006, 2007) shows the application of the VSM to the study of sociology. This is close to the direction of the research and provides a useful parallel although Stokes uses the concepts from the VSM rather than models social structures per se. Stokes (2004) also uses the VSM to investigate the wider issue of identity. Also close to the research Holten and Rosencrantz (2011) examine the role of linguistic communication in the self-organization of viable social systems and Yolles (2009) studies the VSM and cybernetic basis of corruption and sociopathology in social behaviours, while Espejo (2002) examines the transformation of a small collective, with a shared purpose or meaning into an organization with closure through the processes of constitution (VSM). Johnson (2011) uses the VSM to examine human memory and cognition through the perception of music.

Less relevant to the research but nevertheless useful as examples of the versatility of the VSM Chyan Yang and Hsueh-Chuan Yen (2007) and Leonard (2000) show how the VSM can be used as a perspective on knowledge management while Ríos and Jiménez (2015) apply the VSM to complex decision making. Losscher (2011) uses variety engineering and the VSM to examine leadership from a cybernetic perspective and Leonard (1993) uses it to model response to catastrophe.
These studies demonstrate, not only the wide versatility of the VSM, but its ability, stated previously, to cross the ‘hard soft divide’ and provide deeper insight into the viability of a wide range of systems. They provide another piece of evidence, but they do not prove, that the construct adopted for the research should be suitable for studies into human behaviour.

5.15 Validity Measures

Saunders et al (2009 p372) provides five criteria for judging the soundness of research, namely internal validity, content validity, predicative validity, construct validity and reliability. Yin (p40), also, provides four alternate criteria for judging the quality of case study design, namely; construct validity, internal validity, external validity and reliability. For this research three measure were considered appropriate internal validity and construct validity and reliability.

The results of each question are examined for internal and construct validity in light of the results and feedback from the interviewees. Internal validity “refers to the ability of the question to measure what the research intended to measure” (Saunders et al 2009, p 372). In the type of questions asked in the questionnaire there could be a range of factors which contribute to reducing the validity of the question, such as; failure to understand the question, social bias, embarrassment at answering the question, or quite simply respondents anticipating the question and not wishing to portray their group in a certain light that conflicts with social or group norms.

Construct validity “refers to the extent to which the measurements obtained actually measure the presence of those constructs the researcher intended” (Saunders et al 2009, p 373). Several questions in the questionnaire query complex abstract ideas or feelings. While the question may have internal validity, in other words people respond with ‘what was asked’, it may, nevertheless, not have construct validity if ‘what was asked’ is not what the research question intended to find out. The ability of a single question to measure complex feelings about aspects of group membership was recognised from the pilot study as being difficult to achieve. Internal and construct validity require careful and accurate assessment if the data is to have scientific value.

Robson, (2011- Kindle 5223) suggests Maxwell’s (1996) typology of; description, interpretation and theory are important to understand as they pose particular threats to the research validity. The key aspects are; description - good record keeping is essential to provide a sound description, interpretation, imposing too rigid a framework may prevent meaning from emerging during the research, “validity of interpretation in any form of qualitative research is contingent upon the ‘end product’ including a demonstration of how that interpretation was reached.”, theory, alternative explanations and understanding of the phenomena observed should be put forward and examined. Additionally; particularly for qualitative studies bias and rigour are key factors. Research involving people will always
include bias which must be identified wherever possible. Multiple sources and observations should be used whenever possible to confirm findings through triangulation and finally, reliability is important. Being thorough, careful and honest in carrying out the research and also being able to show others what you have done.

5.16 Validity of Research Findings

Table 5.4 shows the assessments of the internal and construct validity for each component. A full assessment is contained in Appendix 3 at Section 3.2.6 the analysis of individual components.

While generally the validity was considered satisfactory, it was evident that some components were not well suited to a questionnaire design because of their complicated nature, specifically; group attitudes, model of external environment, planning processes, audit, autonomic adaptation, group resource, self-categorization comparative fit, distinctiveness 2 and boundary. Individuals sometimes had difficulty in grasping the concept of the question and this had to be added verbally when the questionnaire was being completed; for instance, with the component planning processes individuals would need some examples such as, “does your group ever sit down and talk about how it will…?” This issue was partly identified at the pilot study focus group who suggested moving away from Likert style questions to ranked questions that explained more about the issues involved. Finding the right questions remains a key issue in the research.

Only one component, symbols was found to have poor validity and was subsequently removed.

The validity of the qualitative data is assessed very differently. As Robson (2011, Kindle 5155) states “…in a qualitative study, the quality of data is paramount. Investigators must attend to sampling adequacy (enough data), and sampling appropriateness (by interviewing ‘good informants’ who have experienced the phenomenon and who know the necessary information). If the proposed methods of data collection are not working and resulting in useful data, the investigator must change strategies.” In the research more data could have been useful, although this had to be balanced against the large analysis workload it produced to keep it within the scope of the research, however, those interviewed produced good results – so the qualitative data was considered valid.
### Table 5.4 – Summary of Internal and Construct Validity

<table>
<thead>
<tr>
<th>Component name (Anderson-Darling test for normality)</th>
<th>Validity (internal/construct)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entitativity (normal)</td>
<td>Satisfactory Doubtful - requires qualitative methods and external perspective to provide more comprehensive answer and triangulate</td>
</tr>
<tr>
<td>closure (normal)</td>
<td>Just satisfactory Limited – single question was unable to explore the full richness of a group’s external modelling</td>
</tr>
<tr>
<td>ethos (normal)</td>
<td>Good Sound</td>
</tr>
<tr>
<td>prestige (normal)</td>
<td>Good Sound</td>
</tr>
<tr>
<td>purposefulness (normal)</td>
<td>Moderate – subject to some social stigma/bias Sound</td>
</tr>
<tr>
<td>symbols (normal)</td>
<td>Poor – wrong association Poor – tendency of people to identify with organisational symbols and not social group ones.</td>
</tr>
<tr>
<td>prototypicality (non-normal)</td>
<td>Good Sound</td>
</tr>
<tr>
<td>group attitudes (normal)</td>
<td>Good Limited – single question was unable to explore the full richness of a group’s attitudes</td>
</tr>
<tr>
<td>model of external environment (normal)</td>
<td>Good Limited – single question was unable to explore the full richness of a group’s external modelling</td>
</tr>
<tr>
<td>planning processes (normal)</td>
<td>Good Limited – single question was unable to explore the full richness of a group’s planning process</td>
</tr>
<tr>
<td>self-esteem (non-normal)</td>
<td>Good Reasonable.</td>
</tr>
<tr>
<td>self-value (normal)</td>
<td>Good Good</td>
</tr>
<tr>
<td>self-understanding (normal)</td>
<td>Good Adequate</td>
</tr>
<tr>
<td>social conflict (group synergy) (normal)</td>
<td>Satisfactory – sensitive question Good</td>
</tr>
<tr>
<td>audit (normal)</td>
<td>Satisfactory Limited – single question was unable to explore the full richness of a group’s audit processes</td>
</tr>
<tr>
<td>algedonic signal (normal)</td>
<td>Doubtful - wrong term used Doubtful – needs further investigation</td>
</tr>
<tr>
<td>autonomic adaptation (normal)</td>
<td>Doubtful Limited – single question was unable to explore the full ability of a group’s adaptation processes</td>
</tr>
<tr>
<td>depersonalisation1 (normal)</td>
<td>Good Good</td>
</tr>
<tr>
<td>depersonalisation 2 (non-normal)</td>
<td>Satisfactory Reasonable</td>
</tr>
<tr>
<td>network activity (normal)</td>
<td>Good Good</td>
</tr>
<tr>
<td></td>
<td>Social Mobility (normal)</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------</td>
</tr>
</tbody>
</table>
|                                | Satisfactory - but social bias | Required assistance  
Satisfactory but limited – single question was unable to explore the full ability of a group to allocate opportunities for self esteem | Adequate – but social stigma  
Limited – needs to identify behaviours more effectively and would benefit from qualitative methods | Good  
Limited – needs to identify behaviours more effectively | Doubtful | Good – but sensitive  
Limited – needs to identify behaviours more effectively and would benefit from qualitative methods | Sound – but needed help  
Reasonable | Doubtful – social bias | Good – but sensitive | Sound – needs to identify behaviours more effectively and would benefit from qualitative methods |
5.17 Reliability

A definition of research reliability is given by Robson:

 Reliability - This is the stability or consistency with which we measure something. (Robson, 2011, Kindle 3038).

The quantitative reliability was examined using Cronbach’s Alpha tests. The Cronbach’s Alpha scores for the VSM System averaged components were used to assess the reliability of the VSM System’s ‘unidimensionality’, that is the degree to which they consistently reflect the construct that they are measuring (Field 2013 p 709). However, the components that make up a VSM System are not necessarily measuring the same thing, for instance; System 2 components are measuring cohesion, however, this can be seen as ‘a sense of us’ or harmony or group resource coordination, so whether they all contribute to the unidimensionality of cohesion in the same manner is another question.

Field (2013, p709) states that academic opinion varies as to the minimum value at which Cronbach’s Alpha indicates reliability. Estimations vary from .8 (Kline, 1999) to .5 (Nunnally, 1978); however, Field suggests that there are many reasons not to use these guidelines blindly. He recommends that in order for Cronbach’s Alpha to provide a good measure of ‘reliability’ the data should be carefully examined for sub-factors.

Table 5.5 – Cronbach’s Alpha for VSM System Scores

<table>
<thead>
<tr>
<th>VSM System</th>
<th>Cronbach’s Alpha Corrected</th>
<th>Assessment of unidimensionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>System 5</td>
<td>.479 (.520)</td>
<td>Low (just reliable)</td>
</tr>
<tr>
<td>System 4</td>
<td>.474 (.541)</td>
<td>Low (just reliable)</td>
</tr>
<tr>
<td>System 3</td>
<td>.667</td>
<td>reliable</td>
</tr>
<tr>
<td>System 3*</td>
<td>.403 (.598)</td>
<td>very low (just reliable)</td>
</tr>
<tr>
<td>System 2</td>
<td>.567 (.616)</td>
<td>just reliable (reliable)</td>
</tr>
<tr>
<td>System 1</td>
<td>.442 (.595)</td>
<td>Low (just reliable)</td>
</tr>
</tbody>
</table>
The presence of sub-factors will reduce the ability of Cronbach's Alpha to measure the 'unidimensionality' of the data. Where these are discovered the data should be broken down and Cronbach's Alpha used to measure the reliability of each of these sub-areas. Table 5.5 shows the Cronbach’s Alpha scores for the VSM Systems and the corrected scores where suspect components were removed.

As such, the research data suggests that there are sub-factors in each of the VSM Systems. The Factor Analysis at Appendix 3 Section 3.4 partly endorses the suggested breakdown of components in the key-processes, although in nearly all systems the removal of some components was required to achieve a better score. Field (2013, p709) suggests that if a questionnaire can be divided into different factors then these should be measured separately.

The key-processes which are designed to measure specific attributes of the model; such as the identity formation process, achieve this and should, therefore, not show the presence of sub-factors and this is indeed the case. The key-processes scored highly for Cronbach's Alpha suggesting good unidimensionality, see Table 5.6

<table>
<thead>
<tr>
<th>Key-process</th>
<th>Cronbach’s Alpha</th>
<th>Assessment of unidimensionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>System closure</td>
<td>0.6561</td>
<td>Reliable</td>
</tr>
<tr>
<td>Identity formation</td>
<td>0.8727</td>
<td>Very reliable</td>
</tr>
<tr>
<td>Cohesion</td>
<td>0.8938</td>
<td>Very reliable</td>
</tr>
<tr>
<td>Power sharing</td>
<td>0.7413</td>
<td>Very reliable</td>
</tr>
<tr>
<td>Autonomic adaptation</td>
<td>0.7711</td>
<td>Very reliable</td>
</tr>
</tbody>
</table>

The reliability for the qualitative data was achieved by maintaining an audit trail with recordings of the interviews and notes in accordance with Robson (2011, Kindle 5301).

5.18 Secondary Data

Secondary data was used in the research for the evidence of ‘age of group’. Group records where available were examined for the;

History of the group,
• When it was founded and how long it has been going
• Any fundamental changes to the identity of the group in that time
• The purpose of the group – Vision and Mission statements
• The group values and beliefs – statements of values
• Logos and symbols of identity
• Group plans and strategies and targets
• Group outputs and functions determined from publications
• Attitude Surveys, notice boards,
• Company Magazines

5.19 Ethics

There were ethical issues surrounding the research. The greatest problem encountered was gaining informed consent. The issue of ‘identity ownership’ i.e. who is in charge of the group’s identity, became an issue when trying to gain access. Frequently junior individuals of a group would be keen to undertake the research but this would be blocked when permission was sought at a higher level. Full details of the ethical considerations are contained at Appendix 1

5.20 Summary of Chapter

The chapter aims complete the research design by detailing the conduct of the research in accordance with the research methodology. The chapter identified the research objectives, propositions and hypothesis, It then detailed the conduct of data acquisition including the selection of groups by sampling, key aspects of the protocol and the pilot study focus group before detailing the variables used. It then discussed key issues surrounding the work such as validity, reliability and ethics permission.
6.1 Aim of the Chapter

The aim of this chapter is to present the results of the research. The results shown are for the presentation of the final synthesis of group-type only for reasons of completeness. The full analysis and synthesis from individual to group-id and from group-id to group-type is available at Appendix 3, which will be referred to in the text of this chapter. The chapter starts with a summary of the quantitative data analysis and then presents the quantitative results. Following this the chapter provides an overview the qualitative results so that the next chapter is able to combine the two sets together to produce a synthesis of the group-types.

6.2 Quantitative Data Analysis Summary

The following sections contain an overview of the analysis of the data collected by the questionnaire. The section starts with an summary of the results of the analysis of the individual components which were examined by a correspondence table breakdown by group-id and group-type for each component, as well as for correlations between components and for validity in light of the answers and other evidence gathered during data collection.

Before comparing the means of the VSM Systems group-type scores a reliability analysis is conducted using Cronbach’s Alpha to investigate their ‘unidimensionality’ and a factor analysis is used to determine if there is an alternative breakdown of the components other than the VSM Systems and the key-processes.

Having confirmed the suitability of the data for the research each component score is averaged by VSM System and then again by group-id and by group-type. Tests for normality at each stage are undertaken to examine the data for skewness, kurtosis, normality and homogeneity of variance to confirm its suitability for analysis.

Both non-parametric and parametric tests are then used to compare the differences between the VSM System means by group-type. The non-parametric Kruskal-Wallis pairwise comparison and examination of homogeneous subsets is followed by a parametric ANOVA using a Games-Howell post hoc test to compare means to avoid incurring significant Type I and II errors.

Any correlations are then examined, starting with an inspection for any relationships between the average viability of group-types and the age of group and the membership time to identify if these factors are able to provide an overall measure of viability. The analysis
then examines if there are any correlations between the components and the age of group and the membership time.

The key-processes are then studied for their internal relationships and a narrative of internal process is developed. Lastly the qualitative data is examined for each group-type using the knowledge gained from the semi-structured interviews.

The statistical computations used in the analysis are from three sources. Firstly, a model of the data was built in Microsoft Excel which was used to examine the basic descriptive statistics and to provide graphs of the outputs, secondly much of the more complex analysis, such as ‘factor analysis’, was done with SPSS statistical software and lastly, the online facility at Wessa.net¹ was used for determining the relationship between components.

6.3 Analysis of the Individual Components

6.3.1 Visual Inspection and Descriptive Tests

The components that make up each VSM System were examined for mean, standard deviation, skewness and kurtosis to assess normality in order to ensure that any conclusions drawn from the data were cognisant of possible bias as confidence intervals and parametric significance tests for small samples can be influenced by non-normality. The mean, standard deviation, skewness and kurtosis values for each VSM System component are shown in Table 6.1. The significance test for skewness and kurtosis are derived from the standard error (Field 2013 p184).

Three components were identified with a significant negative kurtosis statistic (flat or level) namely; symbols (System 5), distinctiveness1 (System 1) and distinctiveness2 (System 1) – symbols was also identified in the qualitative analysis as a problem variable and this led to its exclusion from further analysis.

6.3.2 Goodness of Fit Tests

Field (2013, p184) suggests that running the Kolmogorov-Smirnov (KS) and Shapiro-Wilk (SW) tests for normality for large samples (>30) will, by the Central Limit Theorem produce significant results for even small differences, he suggests that this is misleading. To overcome this problem the Anderson-Darling test for normality is recommended. The Anderson-Darling test for normality is a Goodness of Fitness test that is a modification of the

¹ Wessa, P. (2014), Free Statistics Software, Office for Research Development and Education,
KS test. It gives more weight to the tails than the KS test and has the advantage of greater sensitivity; however, critical values must be calculated for each distribution.

The Anderson-Darling test is severely affected by ties in the data due to poor precision. When this is the case the Anderson-Darling test will frequently reject the data as non-normal regardless of how well the data fits a normal distribution. The results of the Anderson-Darling test are shown in Table 6.1. They show 5 components that are significant with $p < 0.05$ therefore, for these components the null hypothesis was rejected and the distributions were considered not normal. These were; prototypicality, self-esteem, depersonalisation2, distinctiveness1 and optimal distinctiveness.

### Table 6.1 – Descriptive Statistics for all System Components

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Sig</th>
<th>Anderson Darling</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-group favouritism</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Ethics</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Prestige</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Purposefulness</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Symbols</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Model of prototypicality</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Group attitudes</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>De personalisation</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Self-value</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Self-understanding</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Social conflict</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Social mobility</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Group resource coordination</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>De personalisation comparative fit</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Self-categorization comparative fit</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
<td>1.42</td>
</tr>
<tr>
<td>Distinctiveness 1</td>
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<td>5</td>
<td>2.44</td>
<td>1.04</td>
<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
<td>3.74</td>
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</tr>
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<td>0.10</td>
<td>0.00</td>
<td>1.00</td>
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<td>1.42</td>
</tr>
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<td>2.44</td>
<td>1.04</td>
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<td>0.00</td>
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<td>1.00</td>
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<td>1.42</td>
</tr>
<tr>
<td>Out-group derogation</td>
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<td>0.00</td>
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<tr>
<td>Boundary</td>
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<td>1.04</td>
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<td>Valid N (listwise)</td>
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<td>0.00</td>
<td>1.00</td>
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<td>1.42</td>
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</table>

6.3.3 Correspondence Tables of Group-id and Group-type

Following the Anderson-Darling test, examination of group-ids by correspondence (crosstab) table was undertaken. The crosstab tables were produced for the observed, expected and row percentages of each system component variable by group-id and by group-type. The tables were examined for patterns and then the Pearson’s Chi-Squared, Likelihood Ratio Statistic and Fisher’s Exact Test were run, to see if the relationships and differences identified between the components were significant.

To compensate for issues with sample size the Likelihood Ratio Statistic and Fisher’s Exact Tests were also run on each component. The Likelihood Ratio Statistic provides the most reliable results in this case (Field 2013, p724).The Likelihood Ratio statistic is structured as

\[ LR = -2 \sum_{i=1}^{k} n_{ij} \ln \left( \frac{n_{ij}}{n_{i.} n_{.j}} \right) \]
maximum-likelihood theory and is also based on the Chi Squared Distribution but provides more reliable results with small samples. Fisher’s Exact Tests were previously only used for 2 x 2 tables, however, the correction methods applied by SBSS allow it to be applied in this case (Field 2013, p724). Both tests are suitable for use with nominal or ordinal data.

The Likelihood Ratio Statistic and Fisher’s Exact Tests were followed by a ‘post hoc’ Cramer V test to determine the ‘strength of association’ between the two variables. Cramer V is essentially an ‘effect size’ calculation on the Chi Squared Distribution it does not assume randomly sampled data. Cramer's V is the most popular of the chi-square-based measures of nominal association because it gives good norming from 0 to 1 regardless of table size, when row marginals equal column marginals, and it may be used with nominal or ordinal data. With Cramer V the test statistic is modified to provide a value from 0 to 1 with 1 indicating a perfect relationship. The crosstab results are summarised in Table 6.4.

6.3.4 Relationship to other components

The complex relationship between VSM components means that each may well have an effect on the other. Where this may have influenced the results the cross components were identified by both parametric and non-parametric methods, see Appendix 3 Section 3.2.

Pearson’s R was used to establish where there were any relationships between components by average group-id as this provided the greatest sensitivity; however, Pearson’s R is susceptible to Type I errors, therefore, Kendall’s tau was used in addition to compare and confirm the relationships, particularly with those components that tested ‘non-normal’ with the visual inspection or the Anderson-Darling ‘goodness of fit’ test. Group-type averages were not compared as there were insufficient data points for a reliable result. Kendall’s tau was used rather than Spearman’s rho for the non-parametric tests because it provides better results with small data sets and there is evidence to suggest that Kendall’s statistic is actually a better estimate of the correlation in the population (Field 2013, p 278).

The Pearson’s R correlation coefficients for all components are shown at Table 6.2 and the Kendall’s tau at Table 6.3, while a graphical representation of the correlations between System components is shown at Figure 6.1. Only those coefficients with a significant p value of less than .05 are reported. Where the Pearson’s r and Kendall’s tau both show significant p values the relationship is confirmed and shown in bold, otherwise it is treated with caution. Where there is only a significant Pearson’ r correlation and no corresponding Kendall’s tau the relationship is shown in normal text. Where there is a significant Kendall’s tau relationship and no Pearson’s r then the data is shown in italics. Those with a Pearson correlation coefficient of r above .7 are assessed as strong, those above .6 moderate
6.3.5 Tests for Statistical Difference between group-types

*T-tests* were not run to establish parametric differences between *components* by *group-type* for statistical significance because of the problems with testing small samples for normality. These tests were used in the combined data of the *averaged system components* later in the research.
<table>
<thead>
<tr>
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<th>Closure</th>
<th>Prestige</th>
<th>Group resource</th>
<th>Social conflict</th>
<th>Social mobility</th>
<th>Self-catégorisation comp</th>
<th>Self-catégorisation norm</th>
<th>Distinctiveness1</th>
<th>Distinctiveness2</th>
<th>Optimal distinctiveness</th>
<th>In-group favouritism</th>
<th>Out-group derogation</th>
<th>Boundary</th>
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Table 6.3 – Non-Parametric Test - Kendall’s tau Correlations Coefficients between Components

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Figure 6.1 – Plot of Pearson’s R Correlations Between Individual Components for All Systems (blue +ve orange –ve and dotted for weak correlations)
Table 6.4 - Summary of Component Analysis (significant associations and validity)

<table>
<thead>
<tr>
<th>Component name (Anderson-Darling test for normality)</th>
<th>Group-type ranking</th>
<th>Significant association group-id group type</th>
<th>Correlations Pearson’s r (strong – moderate – Kendall)</th>
<th>Validity Analysis (internal/construct)</th>
</tr>
</thead>
<tbody>
<tr>
<td>entitativity (normal)</td>
<td>1 charities 2 institutions 3 business 4 religious 5 social</td>
<td>no</td>
<td>depersonalisation2 (.709) self-esteem (.702) depersonalisation1 (.682) self-value (.658) adaptation (.628) closure (.609) group attitudes (.600) group resource (.556) social conflict (.478) external environment (.452) distinctiveness1 (.427) boundary (.575) algedonic signal (-.530)</td>
<td>Satisfactory Doubtful - requires qualitative methods and external perspective to provide more comprehensive answer and triangulate</td>
</tr>
<tr>
<td>closure (normal)</td>
<td>1 charities 2 social 3 religious 4 business 5 institutions</td>
<td>sig but not determined</td>
<td>self-esteem (.714) group resource (.630) entitativity (.609) self-value (.601) depersonalisation1 (.595) social conflict (.595) social mobility (.549) external environment (.547) planning process (.516) group attitudes (.482) depersonalisation2 (.479) purposefulness (.475) boundary (.505) algedonic signal(-.813)</td>
<td>Just satisfactory Limited – single question was unable to explore the full richness of a groups external modelling</td>
</tr>
<tr>
<td>ethos (normal)</td>
<td>1 religious 2 institutions 3 charities 4 business 5 social</td>
<td>sig and moderately strong</td>
<td>distinctiveness2 (.561)</td>
<td>Good Sound</td>
</tr>
<tr>
<td>prestige (normal)</td>
<td>1 charities 2 institutions 3 business 4 religious 5 social</td>
<td>sig but not determined</td>
<td>group resource (.565)</td>
<td>Good Sound</td>
</tr>
<tr>
<td>purposefulness (normal)</td>
<td>1 religious 2 charities 3 social 4 business 5 institutions</td>
<td>sig and strong</td>
<td>social conflict (.683) self-esteem (.684) self-understanding (.636) social mobility (.619) planning process (.540) group attitudes (.534) group resource (.493) depersonalisation2 (.480) closure (.425) distinctiveness1 (.411)</td>
<td>Moderate – subject to some social stigma/bias Sound</td>
</tr>
<tr>
<td>symbols (normal)</td>
<td>1 institutions 2 business 3 social 4 charities 5 religious</td>
<td>sig but not determined no</td>
<td>Poor – wrong association Poor – tendency of people to identify with organisational symbols and not social group ones.</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------------------------------------------</td>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>prototypicality (non-normal)</td>
<td>1 institutions 2 business 3 social 4 religious 5 charities</td>
<td>no no</td>
<td>self-categorization norm (.517)</td>
<td>Good Sound</td>
</tr>
<tr>
<td>group attitudes (normal)</td>
<td>1 religious 2 institutions 3 charities 4 business 5 social</td>
<td>no no</td>
<td>self-categorization norm (.728) self-esteem (.713) self-understanding (.690) group resource (.652) depersonalisation2 (.605) entitativity (.600) purposefulness (.534) self-value (.531) external environment (.525) self-categorization comp (.511) closure (.482) algedonic signal (-.561)</td>
<td>Good Limited – single question was unable to explore the full richness of a groups attitudes</td>
</tr>
<tr>
<td>model of external environment (normal)</td>
<td>1 charities 2 religious 3 business 4 social 5 institutions</td>
<td>no no</td>
<td>group resource (.674) planning process (.552) closure (.547) self-esteem (.543) group attitudes (.525) self-categorization norm (.461) entitativity (.452) adaptation (.438) algedonic signal (-.733)</td>
<td>Good Limited – single question was unable to explore the full richness of a groups external modelling</td>
</tr>
<tr>
<td>planning processes (normal)</td>
<td>1 religious 2 social 3 charities 4 business 5 institutions</td>
<td>sig and w’strong sig and moderately strong</td>
<td>external environment (.552) purposefulness (.540) closure (.516) group resource (.485)</td>
<td>Good Limited – single question was unable to explore the full richness of a groups planning process</td>
</tr>
<tr>
<td>self-esteem (non-normal)</td>
<td>1 charities 2 religious 3 social 4 business 5 institutions</td>
<td>sig and w’strong no</td>
<td>self-value (.790) depersonalisation2 (.748) social conflict (.723) closure (.714) group attitudes (.713) entitativity (.702) purposefulness (.664) self-understanding (.624) group resource (.614) social mobility (.602) depersonalisation1 (.569) external environment (.543) self-categorization norm (.500) adaptation (.493) boundary (-.588) algedonic signal (-.813)</td>
<td>Good Reasonable.</td>
</tr>
<tr>
<td>self-value (normal)</td>
<td>1 charities 2 business 3 religious 4 institutions 5 social</td>
<td>no no</td>
<td>self-esteem (.790) social conflict (.699) depersonalisation2 (.679) entitativity (.658) social mobility (.654) closure (.601) adaptation (.554) depersonalisation1 (.551) group attitudes (.531) algedonic signal (-.529)</td>
<td>Good Good</td>
</tr>
</tbody>
</table>

167
<p>| self-understanding (normal) | 1 religious 2 charities 3 business 4 institutions 5 social | sig and w’strong | group attitudes (.690) purposefulness (.636) self-estimate (.624) self-categorization norm (.620) group resource (.564) self-categorization comp (.484) | Good Adequate |
| social conflict (group synergy) (normal) | 1 charities 2 religious 3 institutions 4 social 5 business | sig but not determined no | social mobility (.856) self-estimate (.723) self-value (.699) purposefulness (.688) depersonalisation2 (.673) network activity (.562) closure (.559) social conflict (-.510) group resource (.509) depersonalisation1 (.499) entitativity (.478) | Satisfactory – sensitive question Good |
| audit (normal) | 1 charities 2 religious 3 institutions 4 religious 5 social | sig and w’strong | Adaptation (.535) Optimal distinctiveness (.423) | Satisfactory Limited – single question was unable to explore the full richness of a group’s audit processes |
| algedonic signal (normal) | 1 institutions 2 business 3 religious 4 social 5 charities | sig and w’strong | out-group derogation (.577) boundary (.564) optimal distinctiveness (.380) self-categorization norm (.466) social conflict (-.510) self-value (-.529) entitativity (-.530) purposefulness (-.537) group attitudes (-.561) group resource (-.665) external environment (-.733) closure (-.813) self-estimate (-.813) | Doubtful - wrong term used Doubtful – needs further investigation |
| autonomic adaptation (normal) | 1 charities 2 business 3 institutions 4 social 5 religious | no sig and moderately strong | depersonalisation1 (.704) entitativity (.628) self-value (.554) audit (.535) depersonalisation2 (.515) self-estimate (.493) external environment (.438) | Doubtful Limited – single question was unable to explore the full ability of a group’s adaptation processes |
| depersonalisation1 (normal) | 1 charities 2 social 3 business 4 religious 5 institutions | sig and w’strong | depersonalisation2 (.712) adaptation (.704) entitativity (.682) closure (.595) self-estimate (.569) self-value (.551) boundary (.626) | Good Good |
| depersonalisation 2 (non-normal) | 1 charities 2 religious 3 institutions 4 business 5 social | sig but not determined no | self-estimate (.748) depersonalisation1 (.712) entitativity (.709) self-value (.679) social conflict (.673) group attitudes (.605) in-group favouritism (.589) adaptation (.515) social mobility (.505) distinctiveness1 (.480) self-categorization norm (.480) closure (.479) self-categorization comp (.480) boundary (.485) | Satisfactory Reasonable |</p>
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<th>1 religious 2 social 3 charities 4 institutions 5 business</th>
<th>sig and w’s strong sig and moderately strong</th>
<th>social mobility (.658) social conflict (.562) Good Good</th>
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<td>1 religious 2 social 3 business 4 social 5 institutions</td>
<td>sig but not determined no</td>
<td>social conflict (.856) network activity (.658) self-value (.654) purposefulness (.619) self-esteem (.602) closure (.549) depersonalisation2 (.505) group resource (.499) Satisfactory - but social bias Good</td>
</tr>
<tr>
<td>group resource coordination (normal)</td>
<td>1 charities 2 religious 3 business 4 institutions 5 social</td>
<td>sig and w’s strong sig and strong</td>
<td>external environment (.674) group attitudes (.652) closure (.630) self-esteem (.614) self-categorization norm (.570) prestige (.565) self-understanding (.564) entitativity (.556) social conflict (.509) social mobility (.499) purposefulness (.493) planning process (.485) boundary (-.436) algedonic signal (-.561) Required assistance Satisfactory but limited – single question was unable to explore the full ability of a group to allocate opportunities for self esteem</td>
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<td>group attitudes (.511) self-understanding (.484) Adequate – but social stigma Limited – needs to identify behaviours more effectively and would benefit from qualitative methods</td>
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<td>self-categorization normative fit (normal)</td>
<td>1 religious 2 institutions 3 business 4 social 5 charities</td>
<td>no no</td>
<td>group attitudes (.728) self-understanding (.620) group resource (.570) prototypicality (.517) self-esteem (.500) external environment (.461) depersonalisation2 (.403) algedonic signal (-.466) Good Limited – needs to identify behaviours more effectively</td>
</tr>
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<td>1 institutions 2 social 3 charities 4 religious 5 business</td>
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<td>depersonalisation2 (.480) entitativity (.427) purposefulness (.411) Doubtful Doubtful</td>
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<td>sig but not determined no</td>
<td>ethos (.561) optimal distinctiveness (.496) Good – but sensitive Limited – needs to identify behaviours more effectively and would benefit from qualitative methods</td>
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<td>distinctiveness2 (.496) audit (.423) algedonic signal (.380) Sound – but needed help Reasonable</td>
</tr>
</tbody>
</table>
6.4 Analysis of The Individual Components For Suitability With VSM Systems

Before the components were examined by group-id and group-type they were tested for reliability to assess their level of unidimensionality. A factor analysis was then undertaken to inspect for hidden factors and to confirm the makeup of components for the VSM Systems.

6.4.1 Reliability Analysis of System Components by VSM System

The Reliability Analysis using Cronbach’s Alpha was covered in Chapter 5 Section 5.16, however, the full analysis at Appendix 3 Section 3.3 also provides an indication of which components were not suited to their VSM System, this is relevant to the study in this section and so will be discussed here;

System 5 scored .479 on the reliability test without the component symbols removed (the removal of symbols is discussed later in the section) This was revised to .520 with ethos, prestige and symbols removed with a Corrected Item Total Correlation all over 0.3. This was considered just reliable.

System 4 scored .474. This was revised to .541 with model of prototypicality removed with a Corrected Item Total Correlation all over 0.3. This was considered just reliable.

System 3 scored .667. removal of any of the components decreases the score.

System 3* scored .403. This was revised to .598 with algedonic signal removed with a Corrected Item Total Correlation all over 0.3. This was considered just reliable.
System 2 scored .567. This was revised to .616 with group resource coordination removed with a Corrected Item Total Correlation all over 0.3. This was considered reasonable.

System 1 scored .442. This was revised to .595 with Out Group Derogation, self-categorization normative fit, optimal distinctiveness, boundary and Positive distinctiveness removed with a Corrected Item Total Correlation all over 0.3. This was considered reasonable.

6.4.2 Factor Analysis

The final assessment of the suitability of the individual components as elements of VSM Systems was an examination for hidden factors. The data was investigated using Principle Component Analysis (See Field 2013, p675 – Factor Analysis or Principle Component Analysis) to identify the presence of sub-factors in line with the VSM Systems. Principle Component Analysis can also investigate the possibility that there were hidden factors embedded in the structure or the possibility that there are other ways to unfold the complexity of the model components other than by the VSM Systems?

An oblique rotation (Promax - Kappa 4) was conducted on a Principle Component Analysis to provide a total of eight factors. Factor 1 accounts for 23% of the variance, Factor 2 nearly 12%, Factor 3 approximately 8%, while Factors 4 through to 8 vary from nearly 7% to just above 4%. Overall the eight factors account for 68% of the variance. The factors are examined at the Pattern Matrix at Appendix 3 Table 3.236 and the Structure Matrix at Appendix 3 Table 3.237.

Factor 1 captures the main components involved in the group cohesion/coherence process and includes some components of system closure.

Factor 2 appears to capture the main components involved in the power-sharing process.

Factor 3 with the inclusion of audit, autonomic adaptation and self-categorization normative fit appears to represents the adaptation key-process.

Factor 4 relates to the need for people not to belong to the group. It was negatively related to the key components that determine group membership and strongly related to optimal distinctiveness, the need to retain a sense of self and boundary the need to limit membership.

Factor 5 represents the “alert processes” that warn the system. It was negatively related to closure which as a result of the reverse findings in the data for gossip.
Factor 6 relates to the *individual/group identity formation* processes. It ties together several of the System 1 *components* and also *group attitudes*; however, if would have expected to also relate to *self-value* one of the key identity formation *components*.

Factors beyond Factor 6 are not considered sufficiently relevant to analyse further.

The breakdown of Factors 1 to 6 identifies several of the *key-processes* that span the full range of VSM Systems. The factors extracted did not group by VSM System type but instead tended to range across Systems and align with the *key processes*. This could be a weakness with the conceptual model by demonstrating the lack of similarity between components in the same VSM system, i.e. all components in System 2 should be measuring *cohesion*. However, since the components were established to identify different ‘aspects’ of cohesion, for instance, harmony or ‘a sense of us’, the lack of a high Cronbach’s Alpha could just be identifying these differences.

On the other hand the high Cronbach’s Alpha for the *key processes* does appear to reflect the similarity of their components. This seems reasonable as they were selected because they all relate to a common process.

The Factor Analysis in this area produced results that were much better than expected and suggest that the processes of the VSM are easier to measure than the individual components. This reflects quite an important ‘system thinking’ principle namely, that cybernetics is focused on *processes* and not values. This suggests that a more processes driven methodology might produce better results in future research.

### 6.5 Summary of Suitability of System Components

The next step in building the VSM Systems from the individual *components* was to determine which *components* should be used to average the system scores. The *Summary of Component Analysis* at Table 6.5, the *Reliability Analysis* at Section 6.4.1 and the *Principle Components Analysis* (Factor Analysis) at Section 6.4.2 broadly confirmed the reliability and sub-group construct of the data; however, examination of Table 6.5, which summarises all tests on the *components*, showed several that appear poor in comparison to the others. The component *symbol* fails all the tests while *prototypicality* and *distinctiveness* fail all the tests but are considered at least adequate for validity. *Symbols* was therefore removed from the analysis.

### 6.6 Average of System Components by Group-id

The full data analysis at Appendix 3 continues from the analysis of the individual components and the examination of their suitability as VSM System elements to average the components by their *group-ids*. This is not covered in this chapter but is available at Appendix 3 Section 3.5.3. To provide an indication of the fidelity of the analysis with a
comparison of the group-type results Table 6.6 shows a summary of the results, those components that score above average are highlighted in green and those below in red.

6.7 Average of System Components by Group-type

The main interest of the research was to compare groups formed in different environments to identify the factors affecting the viability of the group, therefore, the mean of the average of the system components was calculated for group-type (business, social, religious, institution and charity) by aggregating the averages of system components into group-type to create the necessary data.

The group-type data was assessed for normality in order to ensure that any conclusions drawn were cognisant of possible bias. The previous examination for normality of system components was not necessarily relevant because of the Central Limit Theorem, however, in this case the samples are small and the significance of the CLT will be limited.
6.7.1 Quality of Data – Tests For Normality

The group-type data was first examined for skewness and kurtosis, then for normality using the Kolmogorov-Smirnov and Shapiro-Wilk tests, then the Levene’s test for homogeneity of variance and finally through visual inspection of histogram and normal Quantile-Quantile (QQ) plots.

Using the Statistic/SE ratio (Field 2013, p184) the significance of the statistics was assessed as:

Group1 S3 and S2, Group 3 S2, Group 4 S1, Group 5 S4 and S3* all have a significant level of skewness.
Group 1 S3 S2, Group 2 S3*, Group 3 S2, Group 4 S4, Group 5 3 and 3* all have a significant level of kurtosis.

The data was then examined by the Kolmogorov-Smirnov and Shapiro-Wilk tests for normality for the averaged system components by group-type.

For the Kolmogorov-Smirnov test; groups 5 S4, 2 S3, 3 S3, 3 S3*,2 S1 were all significantly not normal.

For the Shapiro-Wilk test; groups 5 S4, 1,S3, 5 S3, 2 S3*5 S3 and2 S1* were all significantly not normal.
Table 6.6 - Averaged Component Scores by Group-id

<table>
<thead>
<tr>
<th>Group Type</th>
<th>Business (1)</th>
<th>Social (2)</th>
<th>Religious (3)</th>
<th>Institution (4)</th>
<th>Charities (5)</th>
<th>Avg</th>
<th>And-Darl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business (1)</td>
<td>4.00</td>
<td>3.75</td>
<td>5.00</td>
<td>4.25</td>
<td>3.00</td>
<td>4.00</td>
<td>3.67</td>
</tr>
<tr>
<td>Social (2)</td>
<td>3.75</td>
<td>5.00</td>
<td>4.25</td>
<td>3.00</td>
<td>2.33</td>
<td>3.75</td>
<td>3.60</td>
</tr>
<tr>
<td>Religious (3)</td>
<td>5.00</td>
<td>3.00</td>
<td>4.25</td>
<td>2.67</td>
<td>3.00</td>
<td>4.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Institution (4)</td>
<td>4.25</td>
<td>3.00</td>
<td>4.00</td>
<td>3.00</td>
<td>2.33</td>
<td>4.00</td>
<td>3.67</td>
</tr>
<tr>
<td>Charities (5)</td>
<td>3.00</td>
<td>5.00</td>
<td>4.00</td>
<td>4.00</td>
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<td>Avg</td>
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<td>4.25</td>
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<td>4.00</td>
<td>3.67</td>
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<tr>
<td>And-Darl</td>
<td>3.67</td>
<td>3.75</td>
<td>5.00</td>
<td>4.25</td>
<td>3.00</td>
<td>4.00</td>
<td>3.67</td>
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</table>
6.7.2 Tests for Homogeneity

The Levene’s Test for Homogeneity of Variance hypothesizes that the variance in the group-types is equal. Leven’s Test can produce a significant difference for large samples where there is only a small difference in variance between the groups; however, in this case the samples sizes are small. Nevertheless, Field (2013, p194) suggests that the Levene’s Test for Homogeneity only works well where the group sizes are similar and there was a large sample. In this case both criteria are broken and so the test must be used with caution.

For the test the results were;

System 3; F (4, 3.108) = 3.108, p=.019. The variances for S3 were significantly different.

System 2; F (4, 93) = 2.496, p=.048. The variances for S2 were significantly different.

For all other Systems p>0.5. Therefore the variances were not significantly different.

6.7.3 Summary of Tests for Normality

A final test of normality was undertaken through a visual inspection of the histograms and QQ plots, see Appendix 3 Section 3.5.9.

Table 6.7 summarises the normality tests on the mean of the averaged system components. Those areas where there was an agreement of non-normality across a range of different types of assessment are shown in dark red, those where there was less agreement in light red and those considered to follow a normal distribution are left in white. Greater significance was given to the S, K, KS, and SW tests than the others.

Group 5 (charities) has the three areas of non-normality, System 4 (significant), System 3 (significant), System 3* (possibly significant). This was probably due to the small sample sizes obtained in this area (many charities consisted of small groups working together). From the Systems perspective System 2 has three areas that are possibly significant not-normal. This was not explained.

Key - Skewness (S), Kurtosis significant (K), Kolmogorov-Smirnov (KS), Shapiro-Wilk (SW), Levene’s Test for Homogeneity of Variance (L), Histogram Visual Inspection (H), QQ Plot (Q).
### Table 6.7 – Summary of Test for Normality on Averaged System Components by Group-type

<table>
<thead>
<tr>
<th>group-type</th>
<th>1 business</th>
<th>2 social</th>
<th>3 religious</th>
<th>4 institution</th>
<th>5 charity</th>
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<tbody>
<tr>
<td>System 5</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
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<td>System 4</td>
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<td>System 3</td>
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<td>System 3*</td>
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6.8 Tests for Significant Differences Between Group-type VSM System Means

6.8.1 Non-Parametric Kruskal-Wallis Test

Having examined the data for normality the mixed results achieved suggest that the data must be treated with caution as some components fail tests for normality. A non-parametric test to determine the difference between group-types would at least provide results that are independent of the requirement for normality as data was ranked.

The Kruskal-Wallis Test can be used to test the hypothesis that multiple independent groups come from different populations. It is especially useful if the data has failed the test of normality or has unusual cases (Field 2013). The null hypothesis, that the distribution of the average of the system components is the same across all group-types, was rejected in favour of the alternate hypothesis for all Systems except System 4. This indicated that there were significant differences across group-types with the exception of System 4. (Full details including the pairwise comparison are available at Appendix 3 Section 3.6.1.

The Kruskal-Wallis Test only showed that there were significant differences between the populations of the averaged system components it did not say where the differences were. Examination of the data and comparisons between individual Systems is required to establish the differences; however this increases the probability of Type 1 Errors. For this reason SPSS presents two different test results; a pairwise comparison, and an analysis of homogenous subsets, see Appendix 3 Section Figure 3.111 and, 3.112 and 3.113. The pairwise comparison was more susceptible to Type 1 Errors.

This analysis identified the significant differences as being between;

System 5 - business groups and religious groups and social groups and religious groups

System 4 - does not produce significant results and fails the hypothesis test. This could be due to a poor conceptual model or failure to ask questions that have internal and external validity that result in a complete picture of System 4 function.

System 3 - social groups and religious groups, and social groups and charity groups, also social groups and religious groups and social groups and charity groups and religious groups and institution groups and institution groups and charity groups

System 3* - business groups and social groups, business groups and religious groups,

System 2 - business groups and religious groups, social groups and religious groups, and religious groups and institution groups,

System 1 - business groups and social groups, social groups and religious groups and social groups and institution groups.
6.8.2 Parametric Tests - ANOVA

Conducting multiple independent t-tests on multiple variables to determine if there are any significant difference between their means readily leads to Type I (acceptance of a false null hypothesis) and Type II errors (acceptance of a false alternate hypothesis) (Field, 2013, p 67). Caution, therefore, must be used with parametric tests if there are any doubts about the normality, linearity and homogeneity of the data. The data showed some signs of non-normality, however, it was considered worth investigating if any parametric test provided evidence for the comparison of the average system means. With the dependent variable as the group-types and the independent variables as the average of system means an ANOVA was conducted to examine for significant differences.

Field (2013, p442) suggests that Levene’s Test should first be run on any data to test that the variances in the groups are equal. The previous section contains the tests for normality, linearity and homogeneity of the group-type data which includes, the Levene’s Test for homogeneity. This showed that some of the groups do not have homogeneous variance; System 3 and System 2 both show significant values for Levene’s Test at p=.019 and p=.048. In this case Field (2013, 443) suggests running Welch’s test to verify the F-Test of the ANOVA. See Appendix 3 Section 3.6.3.

A further factor to consider in running an ANOVA is that it is generally considered a ‘robust test’ (Field, 2013, p 444). That is it does not matter much if the assumptions of the test are broken. Quoting Glass et al (1972), Field suggests that there is a lot of evidence to support the assumption that F controls Type I errors well under conditions of skew, kurtosis and non-normality, however, this only occurs when the group sample sizes are similar – which is not the case with the research data. In this case Field suggests running non-parametric tests such as Kruskal-Wallis; this has already been done at Section 6.7.1.

SPSS also provides a means to overcome bias by bootstrapping the data; however, Field (2013, p 465) advises that this only corrects confidence intervals around the means, contrasts and differences between the means with the post-hoc tests but does not bootstrap the main data.

The ANOVA determines whether or not there are significant differences between the groups, however, it does not assess where the differences are between the individual groups. Due to Type 1 errors comparison between individual averaged system components by multiple t-tests was not recommended. SPSS, therefore, provides a number of post-hoc tests to determine the differences between individual groups. In cases where there is no homogeneity of variance Field (2013, p459) suggests that the Games-Howell post hoc test will provide the most effective method to cope with variances differences and unequal sample sizes.
The full results of the ANOVA run in SPSS with Welch’s test and bootstrapping are shown in Appendix 3 Table 3.249. The tests for the average of components for systems gives statistically significant differences between the averaged of components system means by group-type for all VSM Systems except System 4. Appendix 3 Table 3.250 confirms through Welch’s tests that the results for these Systems are robust as the p values are less than .05.

To determine where the differences lay between the averaged component systems means for group-types post-hoc Games-Howell tests were run in SPSS with bootstrapping. The results are shown at Appendix 3 Table 3.251 and summarised below for the significant differences at the .05 level.

**System 5**

social groups were significantly different from religious and charity groups

**System 4**

there are no significant differences

**System 3**

business groups were significantly different from charity groups

social groups were significantly different from religious groups, charity groups

religious groups were significantly different from institutions

institutions were significantly different from charity groups

**System 3**

business groups were significantly different from social groups, religious groups

**System 2**

business groups were significantly different from religious groups

social groups were significantly different from religious groups, charity groups

religious groups were significantly different from institutions

institutions were significantly different from charity groups

**System 1**

business groups were significantly different from social groups
social groups were significantly different from religious groups

Both the non-parametric and the parametric tests produce broadly similar comparisons. These differences are summarised by the plot at Figure 6.2 of the confidence intervals between the averaged system components system scores

6.9 System 3*

System 3* demonstrated very different results from those expected. Those groups with high System 5, 3 and 2 Scores appear to have low System 3* scores and those groups with low System 5,3 and 2 scores have generally have higher System 3* scores. This could be attributable to two possible reasons;

That there was a problem with the interpretation of the theory. While it was expected that more viable groups would demonstrate greater activity in System 3* it was possible that the opposite could be the case. In other words, more viable groups show less activity. This would suggest that ‘activity’ and ‘viability’ are not the same thing. System 3* might be working hard to audit an ‘unviable’ system with many problems, it would, therefore, show high activity but the system as a whole would have low viability. Alternatively, a group with strong identity, coherence and cohesion may be more established in its environment and hence appear more stable, it would therefore need to adapt less and show low activity but high viability. Just because the audit channel has low activity does not mean it is ineffective just so long as when it detects a problem it responds appropriately.

That there was a problem with the construct of the model. Although, there is concern over the validity of algedonic signal and autonomic adaptation, see Table 6.4, and the placing of these components in System 3* when the data is examined in Table 6.4 it can be see that the components audit and autonomic adaptation show very similar results. The order of groups for both these components are very similar with charities at the top, followed by business groups, institutions and religious/social groups. The component algedonic signal, however shows a slightly different order with institutions at the top and then businesses, religious, social and charity groups. However the order is not fundamentally different, with the exception of charities, and this would suggest that all three components show a degree of agreement. From the measurements alone this would suggest that System 3* scores are reasonable and that the preference must be for the first reason, namely, that there was a problem with the interpretation of the theory and that activity and viability are not related in the manner that was expected.
Figure 6.2 – Plot of Averaged System Components with 95% CI by Group-type
6.10 Correlations

The data was examined for correlations between the dependent variables, total average viability, the independent variables age of group (2) and average membership time (E). These two variables were also inspected for correlations between the individual components.

6.10.1 Age of group

The age of group data was not considered suitable for parametric tests, see Appendix 3 Section 3.7.1.2. Since the values of age of group were significantly not normal non-parametric tests for correlation between total viability (both with System 3* and without) and age of group were used. The Kendall’s tau_b and Spearman’s rho correlation coefficients for age of group and total viability (with System 3*) indicated that age of group was not significantly related to total viability and the Kendall’s tau and Spearman’s rho correlation coefficients for age of group and total viability (minus System 3*) indicated that age of group was significantly and positively related to total viability.

6.10.2 Membership time

The membership time data also did not pass the tests for normality, see Appendix 3 Section 3.7.2. The Kendall’s tau non-parametric tests for correlation of membership time and total viability (minus System 3*) indicates that the data are not correlated. The Spearman’s rho non-parametric tests for correlation of membership time and total viability (minus System 3*) also suggests that the data are not correlated. The Kendall’s tau non-parametric tests for correlation of membership time and total viability (minus System 3*) suggests that the data are not correlated. The Spearman’s rho non-parametric tests for correlation of membership time and total viability (minus System 3*) suggests that the data are not correlated.

6.10.3 Averaged Individual Components Correlations Age of Group and Membership Time

From previous inspections age of group and membership time are both considered not normally distributed and so the non-parametric Kendall’s tau test was used to determine the correlations between components and membership time and age of group. The full analysis is at Appendix 3 Section 3.7.3.

The results show that several group cohesion/coherence components were correlated with age of group, these were; ethos, purposefulness, social conflict (group synergy), network activity and depersonalisation; suggesting that groups that survive for longer develop greater cohesion, social activity, social mobility and a stronger sense of ‘us’. Interestingly entitativity did not correlate with age of group. Entitativity, audit and autonomic adaptation were negatively correlated with membership time suggesting that as groups become more familiar
with each other and develop their internal group processes their need to be seen as an entity and their adaptation processes reduce, i.e. activity in System 3* declines. This is contrary to expectations but as discussed at 6.9 low activity in System 3* does not necessarily mean reduced viability, provided the audit and adaption processes remain effective.

Several components from the power-sharing process showed correlations with age of group, specifically; purposefulness, social conflict and social mobility suggesting that groups become more democratic as they get older or alternatively, if age is related to viability, that the more democratic a group is then the more viable it becomes.

Two components were seen to be correlated with both membership time and age of group, namely; ethos and purposefulness. This could suggest that these two components are key indicators of a group’s maturity and, by implication, possibly viability.

Self-understanding was seen to be correlated only with membership time suggesting that people and groups gain insight the longer they are together, however, this correlation was not seen in age of group.

Prototypicality and prestige could have been expected to be associated with age of group but were not among the significant correlations.

6.10.4 Correlations between Components and VSM Systems

The relationships between the components and the VSM Systems become relevant when attempting the synthesis of the groups from the individual components to an overview of their viability. This is done at group-id level to provide fidelity and a better distribution of data. The results are shown at Appendix 3 Section 3.7.4

Most notable of the components for cross system correlations are entitativity, closure, purposefulness, group attitudes, self-esteem, algedonic signal, group resource coordination and self-categorization normative fit and boundary. Also significant was that entitativity, purposefulness and closure are correlated to System 2, suggesting a close link between the processes of group creation, that is forming group norms, creating harmony, a sense of ‘us’ and the ‘closure’ of the system from the outside environment. Similarly all the System 3 components are closely correlated to System 2, again suggesting that the processes occurring in System 2 are important to group formation.

6.11 Key-Processes

The key-processes are constructs used in the research to identify and analyse functions and activities within the model. In VSM terminology, they help to bring certain aspects of the model ‘into focus’; however despite their temporary spotlight they remain related to the other
processes of the VSM in its act of dynamic homeostatic balance. This section explains the methodology used in later parts of the section to analyse and verify the presence of key-processes.

Each key-process is made up of the average of several theoretically related components. This data has already been examined for normality, however, when combining several components it is necessary to test that they all measure the same concept. Cronbach’s Alpha tests for the key-processes have already been presented in Chapter 5 Section 5.16.

For each key-process a generalised methodology is derived for assessing its function in any social group, this is then used in the synthesis of the components to assess the viability of the groups. The details of these processes are provided in Appendix 3 Section 3.8. The generalised methodology aims to provide a systematic process that accounts for all the main factors in the construct of the process from its components using the processes of deduction, induction and abduction.

A full analysis of the key-processes is contained in Appendix 3 Section 3.8, this shows the correlations between components of the same process, the reliability of the process and an assessment of its function in relation to the theory. In this section only a summary of their uncovered function is given, not the process of discovering it, the working of which are shown in Appendix 3.

6.11.1 The System Closure Process

The system closure process showed a ‘feedback loop’ around all the main components suggesting that it is a continuous procedure. Overall the relationships between its components indicates that the less the restrictions on group membership and the greater the group unity, sense of ‘us’, and ‘harmony’ then the greater the group will feel it is insulated from its social environment. The exclusion of ethos from the process suggests that ideals and beliefs, in themselves, are not that important to systems closure. The components group attitudes, self-esteem and autonomic adaptation, showed strong correlations with the process and should be considered for inclusion. Figure 6.3 shows the relationships between the components.
6.11.2 The Identity Formation Process

The relationships observed between the identity formation components corroborate elements of the theory, showing that the more the individuals of the group achieve normative activity in System 1 then the greater the shared opinions of the group, the more the individuals’ feel that they derive meaning and satisfaction from group membership and the greater they share a common image of the group prototype. The correlations show how prototypicality, specifically group attitudes, are important to the self-categorization process and social value to the social identity process.

Further evidence of theory corroboration is shown with the relationship between distinctiveness and several components, indicating that the more the members see differences between their group and rival groups then the greater is the group unity, the drive to create identity and the less people retain a sense of self and adopt the group
identity. These relationships suggest that the identification of distinctions between groups is a purposeful behaviour and helps form group identity with a loss of personal identity.

The correlations also showed that the identity formation behaviours create cohesion within the group with a relationship to depersonalisation i.e. the more individuals of the group have common normative behaviours, see their group as distinct from its rivals and actively attempt to make it more distinct then the greater will be the sense of ‘us’ within the group.

The place of the individual within the group was also confirmed with correlations to self-value, which suggest that the greater individuals feel that they hold a unique place in the group the greater they derive satisfaction from group membership, the more the group is united and the greater the alignment of group opinion and norms. This last correlation seems contradictory unless we accept the concept of the coherence between individual identity and group identity. This is none other than Beer’s “convergence of purpose” – the concept of autonomy.

Further associations show that the more restrictions there are on group membership the less there is unity, shared opinions and a feeling of satisfaction of group membership. In addition the greater the shared opinions, unity, drive for identity and normative behaviours in a group i.e. the more it is a group, then the greater individuals will derive social value from group membership. This partially corroborates the theory that people seek social value from group membership. Since it is not possible to determine which way the correlations operate this could indicate that social value could be derived ‘top down’ or ‘bottom up’ i.e. inherited from a strong group identity or as an emergent property of strong group normative behaviour.

The degree that the group appears as a united entity, that is to say its ‘groupness’, and the drive to create identity must, therefore, absorb the variety from System 3 and 4 below to maintain requisite variety through the regulation of the 3-4 homeostat. The correlations observed show a feedback loop between the high and low level components; this suggests that identity is not necessarily an emergent property of the lower level systems but can be generated or modified anywhere in the loop, as would be expected from a homeostatic relationship. This could indicate that the prototypicality of a group, or the group attitudes, could be maintained, adapted or adopted through internal or external influence in System 4 and then driven into the lower level systems; possibly though processes like ‘selective recruitment’ with the introduction of the same ‘type of people’ i.e. self-selection, or by imposition of roles that force the identity onto group members. It is suggested that this option will not have the same effect of enhancing self-value, self-esteem or self-understanding as if it were generated internally as an emergent property of the shared beliefs of group members.
6.11.3 Group Cohesion Process.

The data showed significant associations between the group cohesion/coherence components. Common to several of the components were relationships with entitativity, closure and social conflict. Entitativity is the degree that the group is seen as a distinct unit, which reinforces the idea that the sense of ‘us’ is passed from System 2, through the Systems 3 component social value to System 5, where it is encapsulated as a concept or simple idea of ‘us’. The greater this feeling of ‘us’ created by the depersonalisation process the greater the group will be able to achieve system closure from the environment and the more there will be a shared purpose driving the group. These correlations could also work downwards through the systems i.e. a concept of unity inherited from a higher level of recursion could create coherence in System 3 and a ‘sense of us’ in System 2. The System 2 connections to the System 4 group attitudes, also suggests that the greater the shared opinions of the group the greater the cohesion of the group the stronger its prototypicality.
The connection observed to *self-categorization normative fit* is vital as it shows that the System 1 elements are being maintained by *central regulatory control*.

The System 3 associations suggest that the greater the shared opinion, drive, opportunities for development and accepted normative behaviour then the greater the *group synergy* and the *group cohesion*. These show that System 3 manages the *cohesion* activities of System 2 and the System 1 activities to create *coherence* and *synergy* within the group.

The negative correlations to *algedonic signal* in System 3* suggest that the less people feel that they fit the group norms, feel there is a group synergy, feel united, are driven to create identity, share group attitudes, benefit from group development and feel that the group is insulated from the environment then the greater is the ‘gossip’ or *algedonic signal* in the group. These correlations complete feedback loops around all the systems which relates all the *cohesion components*.

In System 4 the correlations show that the greater the strength of *prototypicality* the greater the group appears united, insulated from the environment and driven to create identity and cohesion.

The System 5 component associations have been discussed in the lower level systems, there appears several internal System 5 correlations between *entitativity* and *closure*, and *closure* and *purposefulness*. No correlations were observed with *ethos* which would be expected to be included in this process as the guiding ideals of the group and the overall unifying factor – instead *entitativity* appears to take its System 5 role as *identity protector*. Since there is evidence from other VSM research (Espinosa, 2015-forthcoming) that ethos plays a significant role in the cohesion of groups and hence influences *viability* these results would appear to reflect on the validity of the question. It could be that the component *group attitudes* took the focus from *ethos*. People found it easier to assess whether they had a ‘common attitude’ with others than if they shared ‘ideals’. This is similar to asking people to determine the group ‘norms’. Since these behaviours are automatic and semi-conscious people are not always aware of them and therefore unable to identify them in the questionnaire. With ‘norms’ people were asked “what made you feel uncomfortable when you joined the group?”. Identifying this feeling, of which people were much more aware, helped identify the norms of behaviour in the group. A similar line of questioning should be developed for *ideals*.

There appears to be a feedback loop between the System 5 *components* and the System 4, 3, 2 and 1 components, control could be initiated anywhere in this loop which suggests that cohesion is a continuous alignment of behaviours.
6.11.4 The Power Sharing Process

The analysis showed that the more people feel that they are able to move to other sub-groups i.e. the greater their social mobility, then the more they have a shared purpose and drive with the other members of the group. This seems confusing, unless one considers that when everybody shares the same overarching goals changing sub-groups may not be solely for individual self-esteem but part of the wish of individuals to improve group synergy – “I could do more good over there”. The association between social mobility and group synergy suggests this, although a correlation between group synergy and self-esteem would further suggest that people gain self-esteem from the combined effectiveness of the group.

The more flexible the group is the more likely it is to work effectively, the more group members feel satisfaction from the combined effects of group membership and combined action. The System 5 component purposefulness completes a ‘feedback loop’ from the System 3 and the System 2 components suggesting that the power-sharing process is in a
continuous state of adjustment between the drive to create identity, the self-esteem of individuals in the group, the synergy of the group and the ability of people to move within the group and develop.

Figure 6.6 – Internal Correlations Between Power-Sharing Components

6.11.5 The Adaptation Process

The relationships between the adaptation processes components show a feedback loop between several of the components. The System 3\* components audit and autonomic adaptation are related to each other and then to model of external environment while algedonic signal is associated directly with model of external environment and the System 5 component closure, see Figure 3.125. The System 4 components model of external environment and planning processes were correlated to each other and both complete the feedback loop be connecting to closure. Network activity was not correlated with any of the adaptation components. These associations form a feedback loop between System 5, 4 and
3* that suggests that the better a group’s ability to plan ahead with forethought and anticipation and the better its understanding of its environment then the greater will be its degree of insulation from the outside world and the better will be its ability to audit itself and adapt, also the less will be the concern about the internal activities of the group and the ‘gossip’.

The process shown only examined a sub-set of the adaptation process and does not indicate the full operation of the algenode; for this to occur there needs to be a relationship between System 4, 3*, 3 and 2. As shown the system is missing any connection to System 3 and 2. These can be readily seen in the correlations between the autonomic adaptation component and self-esteem in System 3 and depersonalisation1&2 in System 2, see Figure 6.1.

Figure 6.7 – Internal Correlations Between Group Adaptation Process Components
6.12 Qualitative Data Analysis Summary

In this section the semi-structured interviews are resolved into a narrative that aims to ‘describe’ the group-types from a summary of the records collected. This ‘description’ is then used both to triangulate the qualitative data in the synthesis and also to provide evidence of group coherence and organisational closure.

6.12.1 Analysis of Answers by Group-Type

6.12.1.1 Group Type 1 – Business

All of the business groups associated themselves with an identity that had the most prestige and gave them the greatest self-esteem. When asked about the social-value or prestige of their group, it was evident that the research subjects were acutely aware of the relationships and the relative social standing of the different aspects of their job, picking the one that put them in the best light. Gp 2, a coffee shop group, believed it had the highest standing as an organisation amongst its rivals and so the individuals of this group discussed its brand name and its place on the high street, while Gps 3 and 5, also coffee shops, but of less standing, were keener to discuss their association with what they saw as a highly regarded profession.

Gp 6 was from the more traditional end of the cafe business and was, therefore, unable to use either high standing or profession to derive prestige; however, as a ‘single gender group’ they focused on gender to grow self-esteem and a sense of identity. The commercial business groups generally suffered with poor social-value. Gp 9 had a serious problem due to social stigma of both its organisation and its profession and this had a detrimental effect on the group’s self-esteem. Gps 14 and 15 felt that their groups were not valued at all. Gp 15 was in open conflict with its management.

Surprisingly given the poor view of commercialism in the modern world those working in the business groups were keen to indicate that they worked to high ideals. Their ideals differed substantially from the concepts used by other groups, they were unique in using words such as "hard work", "trustworthy" to describe what they valued, and one group (Gp 14) felt that their "professionalism" stood for high ideals.

When asked “who is ‘us’?” the groups provided identities that correlated with the prestige associations discussed earlier. This was either the brand name of their organisation, i.e. their meta-group (Gp 2, 5, 9), the team that they worked with (Gp 6, 15), or their profession (Gp 3, 5, 14). When it came to defining the purpose of their group, two groups named their meta-groups as their purpose (Gps 2, 9) while the remainder named their profession or aspects of their profession.

The salience of these identities was mixed. The identity that the groups gave was rarely salient outside of the workplace except with those groups that had named their identity as
their profession or in the case of Gp 6, who frequently met socially. Yet, despite having named different sources of identity the business groups (Gps 2, 3, 5, 6, 9, 14 and 15) nearly all tended to see themselves as a ‘team’, in other words, when asked, the members being interviewed normally said that those present made up “the whole group”. This fitted the fact that these same groups gave a description of prototypicality for their ‘work group’ that differed from the prototypicality given for their managers; suggesting a lack of cohesion and power sharing within the meta-group. This was the case even when they were part of a larger organisation and even when they had named the meta-group as their identity. The coffee shop groups tended to identify the prototypicality of their groups based on age, while Gps 6 and 14 included gender. Gp 9 was based on the personality trait of “trustworthiness” and Gp 15 was based on profession.

The coffee shop business groups (Gp 2, 3, 5 and 6) saw their leader as their local manager or supervisor who was very much seen as part of the group and “one of us”. The other business groups, however, quoted the most senior member of the group (Gp 9, 14), deferring to the organisational ‘workgroup’ leader. The final business group (Gp 15) all spoke out against their leadership and management (Gp 15).

The business groups were divided into two distinct sets, namely; those that saw their business competitors (Gps 2, 3, 5, 14) as the out-group and those that saw their own management (Gps 6, 9, 15) as the out-group. It is possible that more groups would have been found in this category had the high status groups in many of the organisations approached not had control of ‘identity ownership’ and blocked access for research. The coffee shop business groups (Gps 2, 3, 5, 6) used in-group favouritism to defined themselves as somehow “better” than their rivals. The conventional business groups (Gps 9, 14, 15) derogated their out-group rivals as “disorganised”, “elitist” and “without values”.

The coffee shop business groups tended to see themselves as isolated teams, and although they sometimes derived prestige and self-esteem from their parent organisations the need for them to work as a close group overruled other sources of social value. The members of those groups that tended to see themselves as ‘teams’ all stated specific areas of work as the source of their self-value, such as “I am good with the till”, while in Gp 6, which was a single gender group, the individuals achieved self-value more for personality traits, such as “I get on well with everybody”. The conventional business groups (Gp 9, 14, 15) struggled to identify specific areas where they felt valued as individuals.

The business groups had different levels of apparent normative behaviour. Gp 2 was a ‘mature’ group where the normative behaviour appeared to have become established, newcomers to the group reported that “initially getting accepted by the other members was hard”. Gp 3, 5 did not provide any evidence of normative behaviour. Gp 6 was hard to assess as the group had a focus on gender to achieve social-value. This meant that they had strong gender norms which made it hard to identify any specific group norms. New
joiners reported that they fitted in easily, which would make sense because they would already have been accustomed to the gender norms required. Gp 9 was the group with one of the longest membership times. Members reported that fitting in always took time which would suggest that group norms were evident. Gp 14 again reported difficulty with new joiners suggesting the presence of group norms, while there was little evidence of normative behaviour in Gp 15.

The coffee shop business groups (Gp 2, 3, 5 and 6) appeared very much as hard-working teams that toiled together to achieve the explicit purpose of the organisation. They varied, however, in the degree that they worked as social groups. Gp 2 showed mature normative behaviours and worked together in their role as a coherent team stating that "it's hard work and it gets very busy but we enjoy it". Gp 3, 5 worked together well stating that "we get on well together—we have a great time", while Gp 6 reported that "we all know what we have to do and how to do it". However, these groups also reported higher levels of "gossip" suggesting that there were increased levels of concern over internal activities and some issues with harmony. Two of the commercial business groups (Gp 9, 14) claimed that they worked together well, although they admitted that they did not socialise outside of work. Gp 15 appeared to be in open conflict with its management and did not appear to have any cohesion or coherence. All of the business groups reported that they gossiped about each other's behaviours within the context of the group. Gp 9 stated that "we gossip about each other all the time; promotion, work everything", Gp 14 stated that they gossiped about a "wide range of issues that ranged from social to professional". Gp 15 stated that their gossip consisted of "we whinge a lot".

All of the business groups were very aware of their vulnerability from commercial pressures and the fact that their organisations would cease to be viable if that business failed. Ultimately to determine the closure of these groups the question is whether or not they are dependent or autonomous from their environments. If the social groups are dependent on organisations then when the organisations fail so will the social group. If the groups are autonomous then they will continue when, or if, the organisation fails. Only one of the business groups, namely Gp 6, reported that the group readily met out of work indicating that despite the work environment they still continued as a social group and could possibly maintain their identity no matter what happened to the organisation they were aligned with. Quite a number of the groups, however, identified with their profession rather than their organisation and the question then becomes whether or not their profession is the focus of the closure.

All of the business groups reported that they did not discuss the way forward as a social group and sometimes even as a business group. The reason for this was that the groups interviewed were frequently not part of the management structure which often had 'exclusive rights' to planning. This is a fundamental issue in power sharing at the high levels of
recursion of the group and significantly impacted on the requisite variety and viability of the groups.

6.12.1.2 Group Type 2 – Social

Neither of the social groups (Gps 8 and 18) felt that they had much social standing or prestige in the wider social environment; reporting that they were not that “well known or understood” but that they were “respected” by those that knew them. The two groups identified themselves differently, one as the reason they met, the other with a clear meta-group label. Both groups represented all, or nearly all, of the members and saw their purposes as the activities they undertook when they met as a group. Gp 18 appeared to have a strong, well-known identity, however, this identity had not been locally generated and it appeared that the group called on the prestige of its parent organisation to maintain self-esteem. The other social group, Gp 8, was associated with each individual’s personal identity, as the group identity itself was very immature, due to the lack of salience of the group to its members. The salience of the identities varied, for one group (Gp 8) the identity was weak and was not relevant away from the group, while the other (Gp18) had some members who were very active in the group for whom it had high relevance “a good deal of the time” but the other members reported no relevance at all between meetings saying the group was salient only “when we meet”.

The social groups did not report strong beliefs or ideals, preferring instead to comment about “shared interests”. Gp 8 suggested that its prototypicality was ‘interest based’, while Gp18 produced an “age, gender and class definition”. Both groups found it hard to answer who their rivals or out-groups were and tended to settle for “not us”.

Members from the social groups (Gp 8, 18) found it hard to find areas where they could achieve something ‘unique’ to develop self-value. There tended to be a few people who ran and organised the activities while the rest only participated at meetings if they wanted to; Gp 8 “they could contribute and have a say if they wanted to”, Gp 18 "no not really we don’t get a chance" or "we just sit and listen most of the time" or "you have to be prepared to do something special". Most individuals based their assessment of the value of their self-esteem on a general feeling of well-being to describe their level of benefit of group membership with those from Gp 8 reporting that they did not benefit greatly and those from Gp 18 suggesting that "I like coming here" and "I wouldn't come if I didn’t like it".

It was difficult to tell whether these groups were guided by social norms or were developing group norms. Gp 18 members reported having to learn to adapt " when they joined", but Gp 8 did were not able to identify any conventions. Both appeared to work together with a degree of coherence by using traditional office mechanisms such as meetings and agendas to maintain cohesion, and did not report much ‘gossip’. Gp 18 members reported that there was “good harmony”. They were largely autonomous, that is to say there were no other
associated groups or levels of recursion and, being locally-made constructs were insulated from the outside world. Serving no other purpose than for their own members and therefore would appear to achieve system closure if they were viable systems. They both reported varied levels of effort at discussing the future.

6.12.1.3 Group Type 3 – Religious

The religious groups (Gps 1 and 17) were very clear about their identity and named themselves as both sub-group and meta-group, seeing themselves as one entity. Neither group was concerned about the prestige of the group, reporting that they were “not that well known or understood” in society but that they were respected by those that knew them. Prestige did not appear to play a part in the way they chose to define their identity. This was because both groups were founded in strong ideals and beliefs that supported the group. Gp 1 stated that their organisation had "developed and maintained" their ideals over many years, while Gp 17 felt that they were held together by their "strong faith". Gp 1 had a very strong ethos but at the same time effective power sharing arrangements and no hierarchy, while Gp 17 had a defined hierarchy, clear roles but equitable power sharing arrangements. The members of both groups were very active in running their group and attempting to build individual and a local identity at the same time. Both saw that the purpose of their groups was to conduct the activities that they undertook when they met as a group, in line with their identity. The groups were highly salient to their members, who reported that the ideals and beliefs of the group were relevant to them “in their daily lives” and not just when the group met.

Of the religious groups, Gp 1 represented a good cross section of the local church, while Gp 17 represented only a small set of the full membership; however, this group were the main part of the church hierarchy and so could have been seen to represent a significant sub-group.

The groups were not easily able to recognise out-groups or rivals, although a variety of suggestions were given from “people outside the group” to “other parts of the organisation” but then they were pushed to explain how these individuals were different from them, with the only suggestions being "we have a faith" for the former and "more welcoming", and "more active" for the latter. Both groups also found it hard to identify a typical member, "we are very open to all", although when socialised, several standard behaviours emerged. Neither group was able to recognise personalities that were different from this prototypicality within the groups’ hierarchies, Gp 17 reporting of their leaders and management "we are the same" while Gp 1 members stated that “the individuals of the group and the rest of the organisation serve the same purpose, there is no separation between us”.

The individual members of both groups found it hard to find areas where they could make a unique place for themselves in the group to create self-value. It was not determined why this
was, whether the groups were simply not active enough, whether people were not interested, or whether the group identity was *inherited* along with the roles for people to undertake, leaving no room for members to make a place for themselves. Those in the hierarchy of Gp 17 felt “they [the other members] appreciate that we do all the organizing”. In Gp 1 “a sizable proportion felt that they were not recognised for any unique contribution.”

Both groups showed very strong signs of normative behaviour. The groups were very mature and clearly had *norms and rituals* that directed their activities. New joiners reported that they had trouble “fitting in” but were “guided” in the ways of the organisation.

Gp 1 was unique in having mechanisms to assist coherence. There was also a remarkably high level of trust between individuals, and the members reported little if no “gossip”. Individuals from Gp 17 however, felt that there were “disagreements from time to time mainly over future plans but otherwise the group worked together well”. The groups did not see their managers as a ‘leader’ but more as an “elected representative”. Both reported processes for discussing the future of the group.

Gp 1 had no hierarchy and was very insistent on *power-sharing* arrangements throughout the group’s organisation. A large proportion of the group was seen and no sub-groups were detected. The group behaved as a single entity. Gp 17 was part of a larger structure, although, the members interviewed did not see a difference between the *prototypicality* of the other parts of the wider group and themselves.

Both groups did not appear to be dependent on any systems in the *social environment* suggesting that they had achieved *system closure* and a high degree of *viability*.

### 6.12.1.4 Group Type 4 – Institution

The members from both *institutional groups* (Gp 4 and 7) were all very aware that they were just a part of a much larger organisation which they did not think had a high social standing, although they felt that they offered a ‘unique service’ and that this was ‘appreciated’ by the public. As a result they tended to categorize themselves by their ‘sub-group’ or team, from which they appeared to gain more *self-esteem* rather than their organisation which they felt lacked prestige. Both groups claimed that they had guiding *ideals and beliefs* which focused on their ‘service to the public’. Gp 7 was salient with its members “24/7” while Gp 4 had a very weak scope, stating that the group had no relevance outside of work. When asked to indicate the purpose of their group they stated their individual sub-group functions. Gp 7 appeared to almost distance themselves from their organisational identity and strongly associated with sub-identities as different ‘tribes’. Gp 4 struggled with its identity. The group appeared to get most of its *prestige* from its *purpose* as a ‘national service’, locally; however, they were not a strong entity although they appeared united, although resigned, against their national management.
In Gp 7 the sub-groups had clearly different prototypicalities that matched their purpose. These were obvious even to an external observer, for example; individuals from one sub-group came dressed to the interview wearing definite symbols (tattoos, badges, style of dress) in a manner that clearly indicated their sub-group and its purpose. All the members were highly aware of the intra-group differences in prototypicality.

The members from Gp 4 could not identify unique areas where they were appreciated by the rest of their group to develop self-value, while those in Gp 7 had clearly established unique sub-identities and within those had created identities or utilized their personal identities to enable them to be appreciated by their peers. When asked what it was that they were appreciated for, the members of Gp 7 gave very diverse responses that were focused exclusively on personality traits, such as “good with the public”, “realistic” and “understanding people”.

Both groups named their own management as the out-group. They both saw a difference in the prototypicality between themselves and their management indicating a lack of cohesion and coherence in the group. Gp 7 felt that their management were ‘in it for themselves’, while Gp 4 did not identify the out-group character. The members of both groups felt that the individuals in management did not have legitimacy, they did not “follow” anyone as such “the supervisor says what we do”. Gp 7 displayed a difference between the individual members with those in high status positions indicating more self-esteem than those in lower positions.

With the institutional groups, Gp 7 showed very strong signs of normative behaviour within each of the individual ‘tribes’, “there’s a very set way things are done”, “it takes a while to get used to who everybody is”, “you have to tread carefully when you join” - “only the right sort of person can do this job”, however the different sub-groups had different norms, “the ....are different from us” or “they like to....”. There were clear signs of different dress codes amongst the different sub-groups. Gp 4 showed very few signs, the members said that they had fitted in but making friends took “awhile”. Neither group reported working with cohesion, coherence or harmony. Gp 4 stated that “we are always changing the way we do things” while Gp 7 felt that there was “not a lot of harmony and they did not work together as well as they could stating “we have our differences”. Both groups indicated that gossip was “rife” and “we are grumbling and moaning about most things”.

At first glance the institutional groups appeared dependent on the social environment and therefore vulnerable to perturbations, they are after all public services. However, if the systems focus is shifted to a high level of recursion, namely that of society, the public services become function providers for the community. That is they are part of societies. System 2. Since System 2 is an emergent property of a VSM it is possible that these institutions ‘automatically’ come into existence where society exists (obviously not always in the exact same form). In this argument institutions are not viable systems in themselves but functions of a viable system (while the Recursive System Theorem states that "In a recursive
organisational structure, any viable system contains, and is contained in, a viable system." (Beer 1990 p118) this refers to the System 1s and not every element of a VSM as this would be impossible) this could indicate why the institutions examined in the research appeared to have pathological autopoiesis because they are not threatened and appear to their members to have an inherent right to exist. Both institutional groups (Gp 4, 7) indicated that they did not discuss the future at all.

6.12.1.5 Group Type 5 – Charity

The charity groups (Gps 10, 11, 12, 13 and16) all identified themselves by their meta-group name, even when they were just affiliates of a wider network. All reported that they were not that well known or understood in society but that they were respected by those that knew them. The association of the local group with its wider affiliates was seen as an attempt to enhance the prestige of the group. The groups all had very strong identities except for Gp 10, despite not being well known in public, which indicated “what they did” and provided them with their purpose. The lack of a wider acknowledgement did not seem to disturb the members who normally stated “we are appreciated by the people who know us” and “what we do is worthwhile” both of which derived self-esteem and therefore there was little need for external appreciation, for instance Gp 11; “the group was a very small little known charity that was still forming; however the dedication of the members was obvious”. The charity groups all reported that the groups’ ideals “filled their lives” and that they achieved their self-esteem from the social-value of the work they did indicating that it was “worthwhile”, Gp 12 members stated “we all believe in what we are doing - in trying to help people”. Most of the members had also found a ‘unique place’ for themselves with high levels of self-value, interacting as individuals with the group over a wide range of characteristics and activities; Gp 12 members said “yes I feel appreciated - I help with a wide range of jobs - we are a very small team.”, in Gp 13 the members interviewed mainly provided answers that related to people skills "I am good at communications", "I have patience", I am a good listener", "I try to be a problem solver", "I try to bring the clients point of view". One member said "I could earn more at Sainsbury’s if I wanted but what I do here is worthwhile"; nearly all the groups identified a prototype by traits, such as “kind and caring”; Gp 11, however, also identified by gender and activity Each member reported undertaking different functions that they felt they were valued for "I organise the events", "I do the art work"

The groups were not able to readily identify out-group or rivals and found the question hard to answer, giving a wide variety of answers from “the council” to “the clients” to “not us” a GP 12 member stated “them is the people that make the ‘red tape’ that stops us doing what we need to do”, and also a positive ‘them’ “the people that we interact with”. When asked how these groups were different from them they were normally unable to answer, although Gp 13 stated "we are more trustworthy than the clients" and “the logistics group are patronising".
The charity groups were very hard to assess for group norms. Several of the groups (Gp 12, 13) gave indications of interaction with new joiners, in particular; the statement "you have to be a certain type to work here" indicated that there could well have been pre-established norms based around behaviours and attitudes and that these norms tended to cause people to self-select or self-deselect with or from the group. All reported working as close teams with harmony and trust. A member from Gp 13 reported "you have to be very careful when dealing with the clients - they are very diverse so we need to all support each other". "We need to trust and rely on each other". The charities frequently use the word "worthwhile" or "we believe in what we are doing" in their reply to questions, and it was this purpose, linked to their identity that drove their cohesion and coherence. While several of the groups had a manager none of them had a leader 'per se'; "we are all accountable to each other" was a typical reply. The groups did not report that they gossiped much. Gp 12 stated that they "gossiped in a positive way".

Examining the closure of the charities was a difficult problem; however, all of them appeared to be in sectors where there was an endless need for their assistance. So as long as they were able to maintain viability there was nothing in the social environment that would cause them to fail. They all reported varied levels of effort at discussing the future.

6.13 Summary of Chapter

This chapter presented an overview of the data. The quantitative data was examined through the statistical tests necessary to assess its suitability for statistical analysis at group-type level. Once these were complete the tests were conducted to establish the significant differences between the mean of the VSM Systems by group-type. The correlations between age of group, membership time and individual components were then resolved before the results of the key-processes were inspected and the significance of the findings discussed. The chapter then presented the qualitative data so that the two sets were ready for the synthesis in the next chapter.
CHAPTER 7 - SYNTHESIS OF COMPONENTS INTO VIALBE SYSTEMS BY GROUP-TYPE

7.1 Aim of chapter

The aim of this chapter is to undertake the final synthesis of the components from the quantitative data and the narrative from the qualitative data to enable the research to identify the invariances of the groups.

7.2 Synthesis

In this chapter the quantitative data is synthesised with the qualitative data to bring together the components to identify the group-id and group-type cohesions, coherences, invariances and key-processes in relation to their viable systems and autonomy (organisational closure). This synthesis is considered only a 'snapshot' of a complex system used to help map its state-space and it is appreciated that this system could change the value of any component at any time and move to a different state. This section mimics the action taken in Appendix 3 Section 3.9.1, the synthesis of the group-ids, only at a higher level of recursion. It takes all the evidence found in the preceding analysis including that in Section 3.9.1, and uses it to synthesis the components into group-type systems. It and then uses the construct to assesses the strength of group-type viability.

The synthesis starts by examining each group-type by assessing the average age of group, membership time, total viability, average score of each VSM system, the strength and consistency of each component, the correlations between systems and components and the qualitative assessments made of each group-type. Again, consistency was determined from the standard deviation (SD) of the answer means.

Each group-type is also examined for its key-processes; individual/group identity formation, group cohesion/coherence, system closure, power-sharing and adaptation. It relies on the methodology established in Appendix 3 Section 3.8.3 to analyse these key-processes, and relates them to the appropriate VSM System averaged by group-type, and the qualitative summary established in Appendix 2. The assessment of viability at the final section involves deductive, inductive and abductive reasoning and should triangulate the quantitative and qualitative datasets. Importantly, the process of synthesis used to combine components allows for emergent properties created by the combination of components to be identified.

These processes are examined for loss of fidelity and the need to retain requisite variety with the group-id synthesis in the next chapter.

7.2.1 Inspection of Data by Group-type

Table 7.1 shows the descriptive data for the statistics with the average membership time as 7.62 years, the average viability score 3.58 (out of 5), the average group age 140.68 years,
the average number of members interviewed in each group-type and their average of 20. (In most parametric statistics tests, such as the t-test, a total of 33 is normally the minimum recommended number of elements required to achieve valid results – for this reason the Shapiro-Wilk and Kolmogorov-Smirnov tests were run on the data to inspect for normality and the Levene test for homogeneity - see Appendix 3 Section 3.5.4 - 3.5.10 and. Non-parametric tests were used wherever the data failed these test, see Appendix 3 Section 3.6.

Table 7.3 along with Figure 7.1 shows the VSM system scores averaged by group-type, while Table 7.4a and b provides the assessment of the key-processes and Table 7.5 gives the individual identity descriptions for each group-type. Lastly, Table 7.6 shows the averaged component scores.

The synthesis of the quantitative data into group-types will utilise the methodology developed in Section Appendix 3 Section 3.8.3 with reference to the data in these tables.

Table 7.1 - Scores and Standard Deviations of Averaged System Components by Group-Type (showing green above-average, red below-average)

<table>
<thead>
<tr>
<th>VSM System</th>
<th>Group Type</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Mem Time (yrs)</td>
<td>2.76</td>
<td>2.18</td>
<td>23.85</td>
<td>8.90</td>
<td>1.89</td>
<td>7.92</td>
<td></td>
</tr>
<tr>
<td>Average Viability</td>
<td>4.57</td>
<td>3.39</td>
<td>3.75</td>
<td>3.46</td>
<td>3.71</td>
<td>3.58</td>
<td></td>
</tr>
<tr>
<td>Avg Gp Age (yrs)</td>
<td>52.29</td>
<td>51.50</td>
<td>313.00</td>
<td>264.00</td>
<td>22.60</td>
<td>140.68</td>
<td></td>
</tr>
<tr>
<td>No Members</td>
<td>23.00</td>
<td>33.00</td>
<td>22.00</td>
<td>9.00</td>
<td>13.00</td>
<td>20.00</td>
<td></td>
</tr>
</tbody>
</table>

The comparison of the group-type means to determine differences in the viability of group-types should take into account whether or not there was a statistically significant difference between means. Table 7.2 (see Appendix 3 Section 3.9.2.1 and Table 3.270 for statistically significant differences between group-type scores at p>0.5 significance level) summarises the different parametric and non-parametric tests conducted on the group-type means, namely; Kruskal-Wallis Pairwise, Kruskal-Wallis Homogenous Significant Differences, Kruskal-Wallis Homogenous Sub-sets, Confidence Intervals and the ANOVA with Games-Howell. The table shows which groups, in which VSM System, have significant differences and also shows the direction of the difference (greater than, less than).

Examining the VSM System scores at Table 7.3 and Figure 7.1, starting at System 5 - the strength of group-type identity, shows the religious and charity groups with significantly higher scores than the business, institution and social-groups who show no significant difference.
System 4, the degree of planning and forethought, shows the religious and charity groups with the highest score, social and business groups with a middle score and institutions with the lowest score; however, these results are not significantly different.

System 3, group coherence and synergy, again shows the religious and charity groups with significantly higher scores than the business, institution and social-groups who show no significant differences.

System 3*, the audit system, which incorporates the algedonic signal and adaptation process, shows the business groups with the highest score, followed by institutional groups, charities, and then religious and social-groups. Only the differences between the first and the last groups are significantly different.

System 2, the assessment of group-type cohesion, again shows the religious and charity groups with significantly higher scores than the business, institution and social groups who show no significant difference.

System 1 shows very little difference between group-types with institutional groups with the highest mark from business and religious groups followed by social and charity groups at the bottom.

Table 7.2 - Summary of Significant Differences Between Group-type Means by Non-Parametric and Parametric Tests

<table>
<thead>
<tr>
<th></th>
<th>Kruskal-Wallis Pairwise</th>
<th>Kruskal-Wallis Homogenous sig differences</th>
<th>Kruskal-Wallis Sub-Sets</th>
<th>CI</th>
<th>ANOVA Games-Howell</th>
</tr>
</thead>
<tbody>
<tr>
<td>System 5</td>
<td>3&gt;1,2</td>
<td>3&gt;1,2</td>
<td>3, 4, 5</td>
<td>3&gt; 1, 2</td>
<td>3&gt; 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1, 2, 4</td>
<td>5&gt; 1, 2</td>
<td></td>
</tr>
<tr>
<td>System 4</td>
<td></td>
<td></td>
<td></td>
<td>3&gt; 1, 2, 4</td>
<td>3&gt; 2, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5&gt; 1, 2, 4</td>
<td></td>
</tr>
<tr>
<td>System 3</td>
<td>3&gt;2</td>
<td>3&gt;2,4</td>
<td>3, 5</td>
<td>3&gt; 1, 2, 4</td>
<td>3&gt; 2, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1, 3, 2</td>
<td>5&gt; 1, 2, 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1, 2, 4</td>
<td>5&gt; 1, 2, 4</td>
<td></td>
</tr>
<tr>
<td>System 3*</td>
<td>1&gt;2,3</td>
<td>1&gt; 2,3</td>
<td>1 4 5</td>
<td>1&gt; 2, 3</td>
<td>1&gt; 2, 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2, 3, 4, 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System 2</td>
<td>3&gt;1,2,4</td>
<td>3&gt;1,2,4</td>
<td>1, 2, 4</td>
<td>3&gt; 1, 2, 4</td>
<td>3&gt; 1, 2, 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1, 4, 5</td>
<td>5&gt; 1, 2, 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5&gt; 1, 2, 4</td>
<td>5&gt; 2, 4</td>
<td></td>
</tr>
<tr>
<td>System 1</td>
<td>1&gt;2</td>
<td>3&gt;2,4</td>
<td>2, 5</td>
<td>1&gt;2,5</td>
<td>1&gt;2</td>
</tr>
<tr>
<td></td>
<td>3&gt;2</td>
<td></td>
<td>1, 3, 4, 5</td>
<td></td>
<td>3&gt;2</td>
</tr>
<tr>
<td></td>
<td>4&gt;2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Examination of the *key-process* scores for the *group-types* at Table 7.4 a and b show religious groups with an above-average score for all the *key-processes*, while charities show an above-average score for every *key-process* except *identity formation*. Social groups show a below-average score for every *key-process* except *adaptation*. Business groups also show a below-average score for every *key-process* except *identity* formation. Institutions show above-average scores for system closure and *identity* formation but not for *cohesion, power-sharing* or *adaptation*.
Table 7.3 Scores And Standard Deviations Of VSM Systems From System Components Averaged by Group-type (showing green above-average, red below-average)

<table>
<thead>
<tr>
<th>VSM System</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>System 5</td>
<td>3.53</td>
<td>3.53</td>
<td>4.03</td>
<td>3.67</td>
<td>3.97</td>
<td>3.74</td>
</tr>
<tr>
<td>System 4</td>
<td>3.75</td>
<td>3.81</td>
<td>3.96</td>
<td>3.42</td>
<td>3.94</td>
<td>3.78</td>
</tr>
<tr>
<td>System 3</td>
<td>3.86</td>
<td>3.79</td>
<td>4.25</td>
<td>3.72</td>
<td>4.38</td>
<td>4.00</td>
</tr>
<tr>
<td>System #</td>
<td>3.76</td>
<td>3.02</td>
<td>3.09</td>
<td>3.52</td>
<td>3.31</td>
<td>3.34</td>
</tr>
<tr>
<td>System 2</td>
<td>3.38</td>
<td>3.35</td>
<td>4.05</td>
<td>3.22</td>
<td>3.85</td>
<td>3.57</td>
</tr>
<tr>
<td>System 1</td>
<td>3.14</td>
<td>2.81</td>
<td>3.13</td>
<td>3.22</td>
<td>2.81</td>
<td>3.03</td>
</tr>
<tr>
<td>System 5 Std Dev</td>
<td>0.68</td>
<td>0.49</td>
<td>0.43</td>
<td>0.42</td>
<td>0.34</td>
<td>0.47</td>
</tr>
<tr>
<td>System 4</td>
<td>0.67</td>
<td>0.54</td>
<td>0.61</td>
<td>0.53</td>
<td>0.47</td>
<td>0.56</td>
</tr>
<tr>
<td>System 3</td>
<td>0.84</td>
<td>0.46</td>
<td>0.49</td>
<td>0.26</td>
<td>0.32</td>
<td>0.47</td>
</tr>
<tr>
<td>System #</td>
<td>0.68</td>
<td>0.65</td>
<td>0.67</td>
<td>0.67</td>
<td>0.62</td>
<td>0.66</td>
</tr>
<tr>
<td>System 2</td>
<td>0.70</td>
<td>0.72</td>
<td>0.33</td>
<td>0.37</td>
<td>0.44</td>
<td>0.51</td>
</tr>
<tr>
<td>System 1</td>
<td>0.61</td>
<td>0.39</td>
<td>0.46</td>
<td>0.61</td>
<td>0.38</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Figure 7.1 - Line Plot of VSM Systems from System Components Averaged by Group-Type
Table 7.4a – Averaged Scores For Group-Type Processes (Showing Green Above-Average, Red Below-Average)

<table>
<thead>
<tr>
<th>Group-type</th>
<th>System closure</th>
<th>Identity formation</th>
<th>Cohesion</th>
<th>Power sharing</th>
<th>Adaptation</th>
<th>Openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.58</td>
<td>3.40</td>
<td>3.70</td>
<td>3.59</td>
<td>3.54</td>
<td>3.95</td>
</tr>
<tr>
<td>2</td>
<td>3.49</td>
<td>3.68</td>
<td>3.47</td>
<td>3.70</td>
<td>3.77</td>
<td>3.50</td>
</tr>
<tr>
<td>3</td>
<td>3.52</td>
<td>3.11</td>
<td>3.40</td>
<td>3.59</td>
<td>3.81</td>
<td>3.72</td>
</tr>
<tr>
<td>4</td>
<td>3.52</td>
<td>3.41</td>
<td>3.40</td>
<td>3.51</td>
<td>3.94</td>
<td>3.22</td>
</tr>
<tr>
<td>5</td>
<td>3.59</td>
<td>3.40</td>
<td>3.99</td>
<td>4.51</td>
<td>3.54</td>
<td>3.34</td>
</tr>
</tbody>
</table>

Table 7.4b – Averaged Scores For Group-Type Processes (Showing Green Above-Average, Red Below-Average)

<table>
<thead>
<tr>
<th>Group-type</th>
<th>Identity hi (5&amp;4)</th>
<th>Identity med (3&amp;2)</th>
<th>Identity low (1)</th>
<th>Cohesion hi (5&amp;4)</th>
<th>Cohesion med (3&amp;2)</th>
<th>Cohesion low (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.52</td>
<td>3.27</td>
<td>3.25</td>
<td>3.66</td>
<td>3.94</td>
<td>3.75</td>
</tr>
<tr>
<td>2</td>
<td>3.31</td>
<td>3.65</td>
<td>2.90</td>
<td>3.58</td>
<td>3.42</td>
<td>3.59</td>
</tr>
<tr>
<td>3</td>
<td>3.64</td>
<td>4.13</td>
<td>3.32</td>
<td>4.11</td>
<td>3.73</td>
<td>4.03</td>
</tr>
<tr>
<td>4</td>
<td>3.60</td>
<td>3.63</td>
<td>3.18</td>
<td>3.62</td>
<td>3.32</td>
<td>3.88</td>
</tr>
<tr>
<td>5</td>
<td>3.78</td>
<td>4.20</td>
<td>2.78</td>
<td>3.94</td>
<td>3.94</td>
<td>4.01</td>
</tr>
</tbody>
</table>

Table 7.4 shows the individual identity description by group-type. These are assessed from the scores for group attitudes, boundary, self-value and optimal distinctiveness at Table 4.11 for each group-type and synthesised using the methodology detailed at Appendix 3 Section 3.8.3.2 and Table 3.269.

Table 7.5 –Identity By Group-Type – Showing Relationship Between Prototypicality, Boundary, Self-Value and Optimal Distinctiveness

<table>
<thead>
<tr>
<th>Group-type</th>
<th>Group attitude</th>
<th>Boundary</th>
<th>Self-value</th>
<th>Optimal distinct</th>
<th>Prototype</th>
<th>Self-value</th>
<th>Optimal distinct</th>
<th>Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.77</td>
<td>2.51</td>
<td>3.85</td>
<td>2.77</td>
<td>strong</td>
<td>high</td>
<td>aligned</td>
<td>associate individual identity</td>
</tr>
<tr>
<td>2</td>
<td>3.50</td>
<td>2.73</td>
<td>3.50</td>
<td>1.93</td>
<td>weak</td>
<td>low</td>
<td>unaligned</td>
<td>non responsive clique personal identity</td>
</tr>
<tr>
<td>3</td>
<td>4.06</td>
<td>2.28</td>
<td>3.79</td>
<td>2.19</td>
<td>strong</td>
<td>high</td>
<td>aligned</td>
<td>associate inherited identity</td>
</tr>
<tr>
<td>4</td>
<td>3.55</td>
<td>3.55</td>
<td>3.58</td>
<td>2.58</td>
<td>weak</td>
<td>low</td>
<td>aligned</td>
<td>affiliate clique personal identity</td>
</tr>
<tr>
<td>5</td>
<td>3.95</td>
<td>2.45</td>
<td>4.19</td>
<td>2.21</td>
<td>strong</td>
<td>high</td>
<td>unaligned</td>
<td>associate inherited identity</td>
</tr>
</tbody>
</table>

Table 7.6 shows the individual components averaged by group-type. Group 1, 3 and 5 the business, religious and the charity groups show more above-average components than below-average, while Group 2 and Group 4, the social and institutional groups, show a greater number of below-average components.
7.2.2 Synthesis Process

7.2.2.1 Business Groups – examination of components

Together the business groups scored the third lowest marks for average viability at 3.57. They had an average membership time of 2.76 years and the average age of each group (Meta groups) was 52.29 years. 23 members were interviewed from a variety of commercial enterprises. These were split into two groups; the first group consisted largely of coffee shop businesses, while the second group consisted of a high street bank and two repair garages.

Compared to the other groups the business groups had the lowest score for System 5 (joint with social groups) suggesting a weak identity. They had the second lowest score for System 4 (group planning ‘there and then’) and were below-average for System 3 (group coherence ‘here and now’). The System 3* score, however, was the highest of all the groups. System 2 (cohesion/coherence) was just below-average and taken with the below-

Table 7.6 – Individual Components Averaged By Group-Type (Showing Green Above-Average, Red Below-Average)

<table>
<thead>
<tr>
<th>Components</th>
<th>Group type</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td>3.35</td>
<td>2.45</td>
<td>2.66</td>
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</table>
average score for System 3 suggest low levels of cohesion. System 1 was the second highest score suggesting high levels of activity to establish identity.

Key-process scores for group-type 1, the business groups, shows identity formation as above-average overall, however, examination of the different levels reveals it to be below-average at high and mid-level and only above-average at low level. A below-average score for cohesion was below-average at every level, as was power-sharing, adaptation and system closure.

For business groups the VSM scores show below-average marks for System 5, suggesting that overall, as a group, they have a low strength of identity. This is partially confirmed by the key-process scores which show below-average marks for the high and mid-level but not for the low-level. VSM System 1 shows an above-average mark and this matches the high score for low-level identity formation, suggesting that business groups are actively involved in identity formation processes although they do not achieve high group identity strength. This could indicate that their identity formation is local and “for themselves” i.e. they focus on finding a place for themselves in the group.

Examination of the individual components for business groups, starting at System 1, shows an above-average score for self-categorization collaborative fit but a below-average score for normative fit. This suggests that business group tend to be ‘immature’ in that they do not manage to move to normative behaviour. Distinctiveness1 is below-average, indicating that, as a whole, business groups are not able to see themselves as different from their rivals, however, distinctiveness2, in-group favouritism and out-group derogation were above-average, which suggests that they are actively attempting to make their group more discernible through identity enhancing behaviours.

The identity formation activity in System 1 does not translate into a high value for self-esteem or self-understanding in System 3. The above-average value for self-value, group attitudes, optimal distinctiveness but low score for boundary, indicates that business groups tend to have an ‘associate individual identity’. That is, the members are guided by clear group attitudes and are able to find a place for themselves in the group, where they feel appreciated and derive self-value in what they see as a non-exclusive system; although, they are at times swamped by the group identity and are therefore not always able to align their individual identity with that of the group.

The business groups appear to have a good image of their prototypicality and group attitudes with above average scores for both of these components. This leads to a high score for entitativity in System 5, however, the overall strength of identity is reduced with low values for prestige and purposefulness, suggesting that business groups do not feel they have much standing in their social environment and do not have a strong shared purpose.
System 3 and 2 had below-average scores, suggesting low levels of cohesion and coherence. This is confirmed by the key-process scores which show the cohesion/coherence process as below-average at all levels. Examination of the individual components that make up the cohesion/coherence process, starting in System 1 show self-categorization normative fit to be below-average, suggesting little normative behaviour. However, depersonalisation 1 and 2 are above-average, indicating good harmony within the business groups and a strong sense of 'us', although network activity and group resource coordination are low. Despite the good harmony and sense of 'us' in System 2, the lack of normative behaviour in System 1 appears to prevent group coherence/synergy (inverse of social conflict) from forming in System 3 and despite the apparent good harmony a high score for algedonic signal suggests that business group members are concerned about the internal activities of the group. The strong group unity, indicated by a high score for entitativity and group attitudes could be the result of inherited processes from parent organisations because the lack of cohesion/coherence processes in System 1 and 3 could possibly not generate the strength seen in the high-level cohesion/coherence process components. This is partially confirmed with the lowest score for purposefulness in System 5, indicating a lack of shared group purpose.

The power-sharing key-process is shown as below-average for business groups as a whole. Examination of the individual components that make up the process shows that the purposefulness, self-esteem, group synergy (inverse of social conflict), social mobility and group resource coordination are all below-average, suggesting that the lack of power-sharing is a serious drawback to the cohesion/coherence of businesses as social groups.

Adaptation was also below-average as a key-process because of a low score for planning process, however, the other individual components, audit, algedonic signal model of the environment and adaptation were all above average.

The business groups scored below-average for system closure. Examination of the individual components shows that while the members feel that entitativity and depersonalisation are good, they recognise their close 'operational connection' with the environment with a low value for closure and their lack of ethos.

These scores, however, hide a very obvious split in the group between the 'coffee shop' businesses and the 'conventional' businesses. Taken separately the 'coffee shop' groups show a combined score that closely matches the religious and charity groups, see Figure 3.122 and 3.123, with high levels for System 4, 3, 2 and 1, and low levels for System 3*.

Analysing this split more closely several distinct patterns were evident that can be seen in Table 3.266. The 'coffee shop' groups tended to show strong identity formation processes although these had often not matured to produce high levels for components in System 5 and not always developed from comparative to normative behaviours. They all tended to
have a high score for distinctiveness suggesting that they were trying to make their group more distinct and optimal distinctiveness suggesting that the individuals and the group were working to find a place for themselves within the group and in the environment. The groups tended to have an adequate score for purposefulness which would suggest that there was sufficient drive to achieve a unique identity. The effort to achieve distinction was followed by a high score for in-group favouritism and out-group derogation across all the ‘coffee shop’ groups as they sought to implement identity enhancing behaviours that favoured the group. The result of these activities in System 1; however, did not appear to lead to a high level of self-esteem. In System 3, and it is suspected that the high level for group attitudes in System 4, and a strong score for entitativity in System 5 is inherited from the parent organisation.

Figure 7.2 – Plot Of System Scores With Removal Of ‘Conventional’ Business Groups Leaving Only ‘Coffee Shop’ Groups

The “coffee shop’ groups also showed strong scores for the low level group cohesion/coherence processes with above-average results for depersonalisation in System 2 resulting in high scores for self-esteem in System 3 and group attitudes in System 4; however, there was little evidence to suggest that these group cohesion/coherence processes in System 1, 2, 3 and 4 had created greater purposefulness or ethos in System 5. It was speculated that this was because there was often little sign of power-sharing at high system levels in the business groups. There was, however, evidence of the start of system closure in some of the groups and high levels of adaptation, they were still open to new joiners and showed little activity on the algedonic network suggesting a lack of internal strife.

The ‘conventional’ business groups by contrast showed a very different pattern. They tended to show much lower values for individual and group identity formation processes.
Distinctiveness was normally below-average which suggested that the group’s members had not found a distinct identity for the group. While self-categorization and in-group favouritism showed a more varied response between groups, dependent on the group’s development, the end result tended to be a reduction in self-value in System 3, group attitudes in System 4 and entitativity in System 5. The groups did, however, tend to show more prototypicality, and it was evident that the groups’ prototypes were inherited from their profession. The ‘conventional’ business groups also showed lower group cohesion/coherence processes with less self-categorization normative fit in System 1, less depersonalisation in System 2, low levels of social conflict (group synergy) and self-esteem in System 3, lower group attitudes in System 4 and poor results for purposefulness, ethos and prestige in System 5. However, those groups with a greater age and membership time appeared to show some degree of closure, although the lack of any high level power-sharing processes appeared to prevent any real development of the groups. Boundary tended to show the groups reducing acceptance of new joiners and levels of algidonic signal were high suggesting a degree of concern about internal activities.

Figure 7.3 – Plot Of System Scores With Removal Of ‘Coffee Shop’ Business Groups Leaving Only ‘Conventional’ Groups

7.2.2.2 Business Groups – qualitative summary (see Appendix 2 for full analysis)

All of the business groups associated themselves with an identity that had the most prestige and gave them the greatest self-esteem. When asked about the prestige of their group, it was evident that the research subjects were acutely aware of the relationships and the relative social standing of the different aspects of their job, picking the one that put them in
the best light by using either the organisations 'brand name', their profession, their gender or the 'team' that they worked with.

Surprisingly, given the poor view of commercialism in the modern world those working in the business groups were keen to indicate that they worked to high ideals, using words such as "hard work", "trustworthy" to describe what they valued.

The identity that the groups gave was rarely salient outside of the workplace except with those groups that had named their identity as their profession or gender. Yet, despite having named different sources of identity the business groups nearly all tended to see themselves as a ‘team’. This fitted the fact that these same groups gave a description of prototypicality for their ‘work group’ that differed from the prototypicality given for their managers; suggesting a lack of cohesion and power-sharing within the meta-group.

The business groups were divided into two distinct sets, namely; those that saw their business competitors as the out-group and those that saw their own management as the out-group. Those that defined their competitors as the out-group generally used in-group favouritism to define themselves as somehow “better” than their rivals, however, the other groups tended to derogated their out-group.

Some of the business groups tended to see themselves as isolated teams, and although they sometimes derived prestige and self-esteem from their parent organisations the need for them to work as a close group overruled other sources of social value. The members of those groups that tended to see themselves as ‘teams’ all stated specific areas of work as the source of their self-value, such as “I am good with the till”,

The business groups had different levels of normative behaviour, and ‘maturity’ and they varied in the degree that they worked as social groups. Some worked together as a coherent team, although, these groups also reported higher levels of “gossip” suggesting that there were increased levels of concern over internal activities and some issues with harmony. One group was in open conflict with its management and did not appear to have any cohesion or coherence. All of the business groups reported that they gossiped about each other’s behaviours within the context of the group.

All of the business groups were very aware of their vulnerability from commercial pressures and the fact that their organisations would cease to be feasible if that business failed. Ultimately to determine the closure of these groups the question is whether or not they are operationally closed from their environment. If the social-groups are dependent on organisations then when these organisations fail so will the social-group. If the groups are autonomous then they will continue when, or if, the organisation fails. Only one of the business groups, namely Gp 6, reported that the group readily met out of work indicating that despite the work environment they still continued as a social group and could possibly
maintain their identity no matter what happened to the organisation they were aligned with. Quite a number of the groups, however, identified with their profession rather than their organisation and the question then becomes whether or not their profession is the focus of the closure.

All of the business groups reported that they did not discuss the way forward as a social-group and sometimes even as a business group. The reason for this was that the groups interviewed were frequently not part of the management structure which often had ‘exclusive rights’ to planning. This is a fundamental issue in power-sharing at the high levels of recursion of the group and significantly impacted on the requisite variety and viability of the groups.

7.2.2.3 Social-groups – examination of components

The social-groups had the lowest score for average viability of all the groups at 3.39. The average membership time was 2.18 years and the average meta-group age was 51.50 years. 33 members were interviewed in two groups.

The key-process scores for social-groups show system closure as below-average with the lowest recorded score amongst all the groups, identity formation as below-average at all levels, also with the lowest recorded overall score of all the groups. Cohesion is below-average and scores low at all levels. Power-sharing is below-average with the second lowest score. Adaptation is above average.

The very low score for System 5 suggests that social-groups have a very weak identity. This appeared to be confirmed by the key-process scores which show identity formation as low at all levels. Examination of the averaged components by group-type shows both self-categorization comparative and normative fit as below average. This suggests a very low level of categorization activity. Distinctiveness1 scores above-average, indicating that the group members see the group as distinct from any comparable group, however, a low score for distinctiveness2, in-group favouritism and out-group derogation suggests that they have no intention of attempting to make their group more distinct with identity enhancing behaviours. Since the score for purposefulness is above-average it would suggest that most of the members of social-groups share a common purpose but are content with a low level of identity.

The low System 1 identity forming activity translates into a low score for all the System 3 components; self-esteem, self-value and self-understanding are all below-average. At System 4 group attitudes is below-average, suggesting that the low effort at identity formation continues and is not inherited from any meta-group. Prototypicality, however, is above-average; this suggests that members of social-groups have a very clear image of a typical group member. In System 5 entitativity and prestige are low, indicating that social-
groups do not see themselves as particularly united, nor do they see their groups as having much standing in their social environments.

The low score for group attitudes, self-value and optimal distinctiveness but high score for boundary suggests that social-groups have, in general, a "non-responsive clique personal identity". That is they see themselves as 'exclusive' despite the weak shared attitudes, their members are unable to create a unique place for themselves within the group to gain self-value and therefore, they do not align with the group identity, preferring to maintain their individuality.

Below-average scores for System 2 and 3 suggests weak cohesion/coherence in the group and this is confirmed with the low scores at all levels for the cohesion key-process. Examining the averaged components, starting at System 1; shows limited normative behaviour with a low score for self-categorization normative fit. The limited normative action in System 1 translates into low harmony and a low sense of 'us' in System 2; where network activity and group resource coordination are also low. In System 3 group cohesion/coherence is low as are group attitudes in System 4. The low score for algedonic signal in System 3 * indicates that the members of social-groups are not concerned with the internal activities of the group. Closure was above average, suggesting that members of social-groups see themselves as insulated from the environment. Ultimately, in System 5, social-groups appear to have low entitativity, ethos and prestige; however, they do have a 'shared purpose'.

Despite the 'shared purpose' power-sharing in social-groups appears low and there is an apparent lack of shared opportunities for development and ability to move amongst the groups.

7.2.2.4 Social-groups – qualitative summary (see Appendix 2 for full analysis)

Neither of the social-groups (Gps 8 and 18) felt that they had much social standing or prestige in the wider social environment; reporting that they were not that "well known or understood" but that they were "respected" by those that knew them. The two groups identified themselves differently, one as the reason they met, the other with a clear meta-group label. Both groups represented all, or nearly all, of the members and saw their purposes as the activities they undertook when they met as a group. Gp 18 appeared to have a strong, well-known identity, however, this identity had not been locally generated and it appeared that the group called on the prestige of its parent organisation to maintain self-esteem. The other social group, Gp 8, was associated with each individual's personal identity, as the group identity itself was very immature, due to the lack of salience of the group to its members. The salience of the identities varied, for one group (Gp 8) the identity was weak and was not relevant away from the group, while the other (Gp18) had some members who were very active in the group for whom it had high relevance "a good deal of
the time” but the other members reported no relevance at all between meetings saying the group was salient only “when we meet”.

The social-groups did not report strong beliefs or ideals, preferring instead to comment about “shared interests”. Gp 8 suggested that its prototypicality was ‘interest based’, while Gp18 produced an “age, gender and class definition”. Both groups found it hard to answer who their rivals or out-groups were and tended to settle for “not us”.

Members from the social-groups (Gp 8, 18) found it hard to find areas where they could achieve something ‘unique’ to develop self-value. There tended to be a few people who ran and organised the activities while the rest only participated at meetings if they wanted to; Gp 8 “they could contribute and have a say if they wanted to”, Gp 18 “no not really we don’t get a chance” or “we just sit and listen most of the time” or “you have to be prepared to do something special”. Most individuals based their assessment of the value of their self-esteem on a general feeling of well-being to describe their level of benefit of group membership with those from Gp 8 reporting that they did not benefit greatly and those from Gp 18 suggesting that “I like coming here” and “I wouldn't come if I didn’t like it”.

It was difficult to tell whether these groups were guided by social norms or were developing group norms. Gp 18 members reported having to learn to adapt ” when they joined”, but Gp 8 were not able to identify any conventions. Both appeared to work together with a degree of coherence by using traditional office mechanisms such as meetings and agendas to maintain cohesion, and did not report much ‘gossip’. Gp 18 members reported that there was “good harmony”. They were largely autonomous, that is to say there were no other associated groups or levels of recursion and, being locally-made constructs were insulated from the outside world. Serving no other purpose than for their own members and therefore would appear to achieve system closure if they were viable systems. They both reported varied levels of effort at discussing the future.

7.2.2.5 Religious groups – examination of components

The religious groups had the highest score for average viability amongst all of the groups at 3.75. They had an average membership time of 23.85 years and an average meta-group age of 313 years. 22 members of religious groups were interviewed in two groups.

The key-process scores for the religious groups show all processes as above-average at all levels. System closure and identity formation are the highest recorded scores of all groups, while cohesion, power-sharing and adaptation are the second highest.

The VSM System 5 score for the religious groups combined suggests that they have the strongest identity of any of the groups researched. The key-process scores for identity formation confirm this with identity formation above-average overall and at every level.
Examination of the averaged components for the religious groups, starting at System 1, shows above-average levels of self-categorization comparative and normative fit and these suggest that religious groups are fairly ‘mature’. The combined group scores show distinctiveness 1 as below-average, suggesting that religious groups do not see themselves as different from comparable groups; however, distinctiveness 2 and in-group favouritism were above-average, suggesting that the members of the groups are attempting to make them more distinct through the identity enhancing behaviour of favouritism rather than derogating an out-group. These identity maintaining activities in System 1 lead to significant levels of self-esteem, self-understanding, group cohesion/coherence (inverse of social conflict) and group attitudes in System 3 and 4. The individuals of the religious groups do not see the groups as particularly united or with much prestige, however, they do feel that they have strong ideals and beliefs and a shared purpose, and this drive helps to maintain identity.

The individuals of the religious groups felt that their groups were not exclusive and they were able to find a unique place for themselves within the group identity to build self-value, however, it is possible, because of the strength of the identity of the groups, that this unique place was a ‘role’ inherited from the ‘mature’ group and therefore they sometimes felt that the group identity ‘swamped them’. Religious groups therefore had an “associated inherited identity”. The lack of exclusivity of the group with a low level for boundary also appears to reduce the image of prototypicality of the group.

The VSM System 2 score for the religious groups is the highest of any of group-types researched, suggesting high levels of cohesion. The VSM System 3 score is also above average indicating a high level of coherence. The scores are confirmed with the marks for cohesion/coherence key-process which shows religious groups to be above-average at all levels. Examining the cohesion/coherence of the group starting with System 1 suggests that there are significant levels of normative behaviour with an above-average score for self-categorization normative fit. This appears to lead to a strong sense of ‘us’ in System 2, but not a high level of harmony. The lack of harmony could be an issue because the religious groups showed a just above average level for algedonic signal suggesting that there is some concern about internal activity. Network activity and resource coordination are also high. The strong group attitudes in System 4 and purposefulness and ethos in System 5 completes what appears to be a ‘self Producing’ system.

All the components of the religious groups’ power-sharing process are above-average suggesting that there are opportunities for the individuals of the groups to develop and preventing any one sub-group from dominating the system.

The religious groups are not dependent on any system in the environment as they are founded in beliefs. This makes them autonomous and their social systems are able to exhibit system-closure provided they have sufficient viability.
The religious groups (Gps 1 and 17) were very clear about their identity and named themselves as both sub-group and meta-group, seeing themselves as one entity. Neither group was concerned about the prestige of the group, reporting that they were “not that well known or understood” in society but that they were respected by those that knew them. 

Prestige did not appear to play a part in the way they chose to define their identity. This was because both groups were founded in strong ideals and beliefs that supported the group. Gp 1 stated that their organisation had "developed and maintained" their ideals over many years, while Gp 17 felt that they were held together by their "strong faith". Gp 1 had a very strong ethos but at the same time effective power sharing arrangements and no hierarchy, while Gp 17 had a defined hierarchy, clear roles but equitable power sharing arrangements.

The members of both groups were very active in running their group and attempting to build individual and local group identity at the same time. Both saw that the purpose of their groups was to conduct the activities that they undertook when they met as a group, in line with their identity. The groups were highly salient to their members, who reported that the ideals and beliefs of the group were relevant to them “in their daily lives” and not just when the group met.

Of the religious groups, Gp 1 represented a good cross section of the local church, while Gp 17 represented only a small set of the full membership; however, this group were the main part of the church hierarchy and so could have been seen to represent a significant sub-group.

The groups were not easily able to recognise out-groups or rivals, although a variety of suggestions were given from “people outside the group” to “other parts of the organisation” but then they were pushed to explain how these individuals were different from them, with the only suggestions being "we have a faith" for the former and "more welcoming", and "more active" for the latter. Both groups also found it hard to identify a typical member, "we are very open to all", although when socialised, several standard behaviours emerged.

Neither group was able to recognise personalities that were different from this prototypicality within the groups’ hierarchies, Gp 17 reporting of their leaders and management "we are the same" while Gp 1 members stated that "the individuals of the group and the rest of the organisation serve the same purpose, there is no separation between us".

The individual members of both groups found it hard to find areas where they could make a unique place for themselves in the group to create self-value. It was not determined why this was, whether the groups were simply not active enough, whether people were not interested, or whether the group identity was inherited along with the roles for people to undertake, leaving no room for members to make a place for themselves. Those in the hierarchy of Gp 17 felt "they [the other members] appreciate that we do all the organizing". In Gp 1 “a sizable proportion felt that they were not recognised for any unique contribution.”
Both groups showed very strong signs of normative behaviour. The groups were very mature and clearly had norms and rituals that directed their activities. New joiners reported that they had trouble “fitting in” but were “guided” in the ways of the organisation.

Gp 1 was unique in having mechanisms to assist coherence. There was also a remarkably high level of trust between individuals, and the members reported little if no “gossip”. Individuals from Gp 17 however, felt that there were “disagreements from time to time mainly over future plans but otherwise the group worked together well”. The groups did not see their managers as a ‘leader’ but more as an “elected representative”. Both reported processes for discussing the future of the group.

Gp 1 had no hierarchy and was very insistent on power-sharing arrangements throughout the group’s organisation. A large proportion of the group was seen and no sub-groups were detected. The group behaved as a single entity. Gp 17 was part of a larger structure, although, the members interviewed did not see a difference between the prototypicality of the other parts of the wider group and themselves.

Both groups did not appear to be operationally coupled to any systems in the social environment suggesting that they had achieved system closure and a high degree of viability.

7.2.2.7 Institutional groups – examination of components

The institutional groups had a below-average score of average viability at 3.46; this was the second lowest score. They had an average membership time of 8.9 years with an average meta-group age of 264 years. Nine members from institutions were interviewed in two groups.

The key-process scores for the institutional groups show above-average scores for system closure and identity formation and below-average scores for cohesion, power-sharing and adaptation. Identity formation is above average at high and low level and below-average at mid-level, whereas cohesion is below-average at high and mid-level and above-average at low-level.

The institutional groups show a below-average score for System 5, which suggests a low level of identity. The key-process score for identity formation, however, shows overall that institutional groups are above-average, although, inspection of the different levels shows that they are above-average at high and low-level but not at mid-level. Examination of the averaged components, starting at System 1, shows above-average scores for self-categorisation comparative and normative fit. This suggests a reasonable level of normative behaviour and that institutions are ‘mature’ groups. The averaged components also show distinctiveness as above-average, indicating that members of institutional groups see
themselves as distinct from their rivals, or comparable groups. Distinctiveness2, however, is below-average. So while the members see themselves as ‘distinct’ from their rivals they do not appear to want to make them more discernible, this is confirmed by the high score for entitativity but low level of purposefulness in System 5. However, in-group favouritism is below-average but out-group derogation is high; this would suggest that the members of institutional groups are maintaining the difference between themselves and their rivals (normally their management) using-group derogation rather than in group favouritism.

The normative behaviour in System 1 does not materialise into high self-esteem in System 3 or an above average score for group attitudes in System 4, which would normally suggest a group that has a poor level of prestige or an inherited identity with poor social standing. In this case of averaged scores, however, institutional groups have high levels of prestige and so the low System 3 scores are not accounted for; but could possibly relate to the poor levels of cohesion within the group or because individuals area retaining their personal identities (see section below) or it could be an issue with the validity of extending the model by averaging the components to group-type level

The high marks for boundary suggest that institutions tend to be ‘exclusive’ while the weak score for group attitudes indicates a weak prototypicality; together these two components suggest a ‘clique’. Looking at the members the averaged component scores show a low mark for self-value, indicating that they do not feel appreciated for a unique contribution to the group; however, the high score for optimal distinctiveness suggests that they, nevertheless, feel that they remain aligned with their sense of self; together these components suggest that institutional groups have an “affiliate clique personal identity”. This states that the members maintain their personal identities and are only partially engaged with the group because they cannot find a unique place where they can build self-value; additionally, the ‘exclusivity’ of the group makes it difficult to join and the weak group attitudes make it unclear as to ‘what’ it is they are joining. This ‘confused identity’ could explain the difficulty experienced earlier with high levels of normative behaviour, high prestige but low self-esteem (these three components are normally strongly correlated). The institutional groups have high levels of normative behaviour because they are ‘mature’ and well established, their members see them as having high prestige because of their role in society and established identity, however, the individuals cannot easily make a ‘place for themselves’ in the group because of the exclusivity and ‘clique’ nature of the group identity. This leads to low self-esteem and poor self-understanding and crosses over into poor cohesion and power-sharing.

The System 2 and 3 scores were the lowest of all the groups, suggesting very low levels of cohesion and coherence and this was confirmed by the key-process scores which marked cohesion as below average overall and at the high and mid-levels but not at the lowest level. Examination of the averaged components for cohesion show an above-average level of self-
categorisation normative fit, indicating reasonable levels of normative behaviour. This does not, however, translate into a reasonable score for depersonalisation 1 and 2, suggesting that the group has low levels of harmony and a low sense of ‘us’. This is confirmed by the below-average score for purposefulness in System 5 and a high algedonic signal, indicating little drive to create cohesion and identity and a large amount of concern over internal group activities. The weak cohesion processes continue with a below-average score for group cohesion/synergy (inverse of social conflict) in System 3 and group attitudes in System 4.

7.2.2.8 Institutional Groups – qualitative summary (see Appendix 2 for full analysis)

The members from both institutional groups (Gp 4 and 7) were all very aware that they were just a part of a much larger organisation. They felt that this organisation had high social standing and that they provided a ‘unique service’ and that this was ‘appreciated’ by the public. However, they tended to categorize themselves by their ‘sub-group’ or team, from which they appeared to gain more self-esteem rather than from their organisation which included the other ‘tribes’. Both groups claimed that they had guiding ideals and beliefs which focused on their ‘service to the public’. Gp 7 appeared to almost distance themselves from their organisational identity and strongly associated with sub-identities as different ‘tribes’. Gp 4 struggled with its identity. The group appeared to get most of its prestige from its purpose as a ‘national service’, locally; however, they were not a strong entity although they appeared united against their national management.

In Gp 7 the sub-groups had clearly different prototypicalities that matched their purpose. These were obvious even to an external observer, for example; individuals from one sub-group came dressed to the interview wearing definite symbols (tattoos, badges, style of dress) in a manner that clearly indicated their sub-group and its purpose. All the members were highly aware of the intra-group differences in prototypicality.

The members from Gp 4 could not identify unique areas where they were appreciated by the rest of their group to develop self-value, while those in Gp 7 had clearly established unique sub-identities and within those had created identities or utilized their personal identities to enable them to be appreciated by their peers. When asked what it was that they were appreciated for by their peers, the members of Gp 7 gave very diverse responses that were focused exclusively on personality traits.

Both groups named their own management as the out-group. They both saw a difference in the prototypicality between themselves and their management indicating a lack of cohesion and coherence in the group. Gp 7 felt that their management were ‘in it for themselves’, while Gp 4 did not identify the out-group character. The members of both groups felt that the individuals in management did not have legitimacy, they did not “follow” anyone as such “the supervisor says what we do”. Gp 7 displayed a difference between the individual members with those in high status positions indicating more self-esteem than those in lower positions.
With the institutional groups, Gp 7 showed very strong signs of normative behaviour within each of the individual ‘tribes’. Neither group reported working with cohesion, coherence or harmony. Gp 4 stated that “we are always changing the way we do things” while Gp 7 felt that there was “not a lot of harmony and they did not work together as well as they could stating “we have our differences”. Both groups indicated that gossip was “rife” and “we are grumbling and moaning about most things”.

At first glance the institutional groups appeared dependent on their social environment and therefore vulnerable to perturbations, they are after all public services. However, if the systems focus is shifted to a high level of recursion, namely that of society, the public services become function providers for the community. That is they are part of societies System 2. Since System 2 is an emergent property of a VSM it is possible that these institutions ‘automatically’ come into existence where society exists (obviously not always in the exact same form). In this argument institutions are not viable systems in themselves but functions of a viable system (while the Recursive System Theorem states that “In a recursive organisational structure, any viable system contains, and is contained in, a viable system.” (Beer 1990 p118) this refers to the System 1s and not every element of a VSM as this would be impossible) this could indicate why the institutions examined in the research appeared to have pathological autopoiesis because they are not threatened and appear to their members to have an inherent right to exist.

Both institutional groups (Gp 4, 7) indicated that they did not discuss the future at all.

7.2.2.9 Charity groups – examination of components

The charity groups had the second highest score for average viability at 3.71. They had the lowest average membership time of 1.89 years and the lowest meta-group age of 22.6 years. 13 individuals were interviewed from five different charity groups.

The key-process scores for the charity groups show above-average scores for all processes except identity formation. Identity formation is just below-average overall and below-average at low-level. At high and mid-level it is above-average. Cohesion is above average at all levels.

System 5 for the charity groups shows a high score, the second highest of all the groups, which suggests a strong overall identity. The key-processes for identity formation however, shows a low score overall. When examined at the different levels identity formation is above-average at high and mid-levels but not at low-level. Examination of the averaged components, starting at System 1 shows self-categorisation comparative fit to be below-average but self-categorisation normative fit to have a very high score. This suggests that charity groups tend to be ‘mature’. Distinctiveness1 is above average, however distinctiveness2 is below-average; indicating that charity group members are aware that
their groups are more distinct than their rivals, however, they do not feel the need to make them more discernible. This appears to be confirmed by the lack of the identity enhancing behaviours of in-group favouritism and out-group derogation which both have low scores. The purposefulness of charity groups is high indicating that the lack of identity enhancing behaviours is not due to a shortage of drive or 'shared purpose' within the groups. The high level of normative behaviour in System 1 leads to a very high score for self-esteem and self-understanding in System 3 as well as a high mark for group attitudes in System 4. Self-esteem is fed from high values in both System 5 and System 1 with high scores for entitativity and prestige in System 5. These suggest a united group that feels it has standing in its social environment. This pattern of identity formation for the averaged group matches the overall trend found in the individual charity groups. The low score for identity formation in the key-process at overall and low-level is attributed to the possible reason that, having established normative behaviour and high prestige and self-esteem, the charity groups, therefore, see little need for further identity enhancing behaviours.

On an individual level a lower level of exclusivity, indicated by a low score for boundary, coupled with the strong group attitudes suggests a group that is easy to join but has a very clear prototypicality. The high score for self-value suggests that individuals have little problem finding a unique place for themselves where they can be appreciated, however, the low score for optimal distinctiveness suggests that, for at least some of the time, the role or identity that individuals adopt within charity groups is not aligned fully with their personal and the group identities, indicating that the individuals in charity groups may have to use inherited identities. Charity groups, therefore, have an "associate inherited identity".

The VSM System 2 and 3 scores are above-average, suggesting a high level of cohesion and coherence, additionally, the key-process scores for cohesion show is above-average at all levels. Examining the averaged components, starting at System 1 shows a high score for self-categorisation normative fit, indicating normative behaviour. This normative behaviour appears to result in a strong sense of 'us' and harmony in System 2 with high scores for depersonalisation1 and2. The low score for algedonic signal in System 3 "suggests that the members of charity groups are not concerned by internal activities despite the fact that network activity and group resource coordination are also high. These last two suggest a highly dynamic system. In System 3 group coherence/synergy (inverse of social conflict) is high and so are the group attitudes in System 4. Overall these signs indicate strong cohesion and coherence at all levels. Only at System 5 do we see a low score for ethos. This is not explained.

Power-sharing is above-average and all components that make up power-sharing are above-average as is the adaptation process with only algedonic signal scoring low marks.
7.2.2.10 Charity Groups – qualitative summary (see Appendix 2 for full analysis)

The charity groups (Gps 10, 11, 12, 13 and 16) all identified themselves by their meta-group name, even when they were just affiliates of a wider network. All reported that they were not that well known or understood in society but that they were respected by those that knew them. The association of the local group with its wider affiliates was seen as an attempt to enhance the prestige of the group. The groups all had very strong identities except for Gp 10, despite not being well known in public, which indicated “what they did” and provided them with their purpose. The lack of a wider acknowledgement did not seem to disturb the members who normally stated “we are appreciated by the people who know us” and “what we do is worthwhile” both of which derived self-esteem and therefore there was little need for external appreciation, for instance Gp 11; “the group was a very small little known charity that was still forming; however the dedication of the members was obvious”. The charity groups all reported that the groups’ ideals “filled their lives” and that they achieved their self-esteem from the social-value of the work they did indicating that it was “worthwhile”, Gp 12 members stated “we all believe in what we are doing – in trying to help people”. Most of the members had also found a ‘unique place’ for themselves with high levels of self-value, interacting as individuals with the group over a wide range of characteristics and activities; Gp 12 members said “yes I feel appreciated - I help with a wide range of jobs - we are a very small team.”; in Gp 13 the members interviewed mainly provided answers that related to people skills “I am good at communications”, “I have patience”, “I am a good listener”, “I try to be a problem solver”, “I try to bring the clients point of view”. One member said “I could earn more at Sainsbury’s if I wanted but what I do here is worthwhile”; nearly all the groups identified a prototype by traits, such as “kind and caring”; Gp 11, however, also identified by gender and activity. Each member reported undertaking different functions that they felt they were valued for “I organise the events”, “I do the art work”.

The groups were not able to readily identify out-group or rivals and found the question hard to answer, giving a wide variety of answers from “the council” to “the clients” to “not us” a Gp 12 member stated “them is the people that make the ‘red tape’ that stops us doing what we need to do”, and also a positive ‘them’ “the people that we interact with”. When asked how these groups were different from themselves they were normally unable to answer, although Gp 13 stated “we are more trustworthy than the clients” and “the logistics group are patronising”.

The charity groups were very hard to assess for group norms. Several of the groups (Gp 12, 13) gave indications of interaction with new joiners, in particular; the statement “you have to be a certain type to work here” indicated that there could well have been pre-established norms based around behaviours and attitudes and that these norms tended to cause people to self-select or self-deselect with or from the group. All reported working as ‘close teams’ with harmony and trust. A member from Gp 13 reported “you have to be very careful when dealing with the clients - they are very diverse so we need to all support each other”. "We
need to trust and rely on each other*. The charities frequently use the word “worthwhile” or “we believe in what we are doing” in their reply to questions, and it was this purpose, linked to their identity that drove their cohesion and coherence. While several of the groups had a manager none of them had a leader ‘per se’; “we are all accountable to each other” was a typical reply. The groups did not report that they gossiped much. Gp 12 stated that they “gossiped in a positive way”.

Examining the closure of the charities was a difficult problem; however, all of them appeared to be in sectors where there was an endless need for their assistance. So as long as they were able to maintain viability there was nothing in the social environment that would cause them to fail. They all reported varied levels of effort at discussing the future.

7.3 Invariances of Group-types

To assess the apparent areas of invariance between the group-types the data was compared for consistencies (invariances), either strong or weak between; the averaged components by group-id, the averaged components by group-type and the qualitative data.

7.3.3 Consistencies and Coherence Between Quantitative and Qualitative Data

7.3.3.1 Business groups

The wide disparity between the coffee shop business groups and the conventional business groups makes any analysis of the invariants of the two as a combined group hard to achieve. The ‘consistent differences’ observed between the two groups show that there was a much greater level of depersonalisation2, a sense of ‘us’, with the coffee shop groups, who also showed a much higher score for entitativity, suggesting that they saw themselves as more ‘united’. This came from much higher levels of shared group attitudes in the coffee shop groups and also a greater feeling that they were distinct from their rivals. The coffee shop groups generated considerably more self-value for their members and as a result were more engaged and aligned with their groups than the conventional businesses who were ‘swamped’ by the group identity and as a consequence disengaged from it.

Despite this diversity in the business groups, continuing with the methodology by taking the description derived from the synthesis of the combined business groups’ average component scores and key-processes and comparing them with the qualitative description we can, nevertheless, identify several invariances – that is components or properties remain consistent at every level of the process, across the business groups.

Firstly, from both the qualitative and quantitative data it is evident that the business groups, in general, suffer from poor prestige. The lack of prestige affected the individuals of the groups by causing them to inherit identities from outside of the meta-group in order to
enhance their self-esteem, this was evident in the quantitative study and confirmed by the qualitative data. The overall lack of internally generated identity was reflected in both the VSM System 5 scores and a lack of identity salience detected in the interviews.

Secondly, in System 1 only a few business groups demonstrated normative behaviour in both datasets. Although most groups indicated efforts at identity enhancing behaviours these efforts seldom appear to improve self-esteem or self-understanding. Both the qualitative and quantitative data suggest that identities, prototypes and group attitudes tend to be inherited and hence provide most of the identity components. Identity was rarely generated or derived from internal purposefulness.

Despite the low prestige and self-esteem the individuals of the groups, nevertheless, managed to make a place for themselves. Both datasets suggests that the strong inherited group attitudes and openness allow individuals to create an ‘individual identity’ (the measurement of self-value to assess the identity formation process was difficult with the qualitative data). The high level of System 1 identity enhancing activity, which does not include normative behaviour, coupled with the high level of inherited identity components suggest that many people in the business groups focused their activity on ‘finding a place for themselves’ in the group rather than creating group identity.

The lack of purposefulness also appeared to severely affect the cohesion and coherence of the groups, which was confirmed by both datasets. While there was an apparent sense of ‘us’ and good harmony it is difficult to see how these can be created without the normative behaviours in System 1 unless they are inherited along with the identity. A clue that this could be the case is provided by the high score for algedonic signal, which suggests the individuals in the business groups are concerned about internal activity despite the apparent harmony.

Perhaps the most significant invariance of the business groups was the lack of power-sharing within the groups. In the quantitative study every component of the power-sharing key-process was below average, while in the qualitative study there was a significant difference between the prototypicality of the workforce and that of the managers in all the business groups; so much so that many of the business groups considered the management as ‘them’ - the out-group. This significant break in the cohesion of the business groups severely restricts their viability as there is no higher level of recursion to create social cohesion and social coherence only a higher group that hands down identity and organisation.

7.3.3.2 Social group-types

On examining social-groups the most significant invariance that appears is the lack of normative and identity enhancing behaviours in System 1. As a result social-groups do not
appear to generate much self-esteem, self-understanding, group attitudes, ethos or prestige unless they inherit this from a meta-group. However, they also do not seem to be concerned about this failing, with a high level of purposefulness, and little ‘gossip’ or concern about internal activities. Social-groups also appear to have a clear idea of their prototypicality, which would make sense as they focus on individuals with a particular shared interest.

Many of the individuals within the social-groups appear to simply participate with the group's activities and do not appear to seek a unique place for themselves. As a result self-value in social-groups is low except for a few ‘organisers’. So while social-groups appear fairly exclusive, because of their shared interests, the members are also only engaged on a personal identity level; maintaining their individuality. In the groups researched a few members had seized the initiative and ran or organized the social group. This means that there for many of the members there are a lack of ‘opportunities for development’, in other words the sharing of chances to enhance individual self-esteem; which would account for the data suggesting a lack of power-sharing and low group resource coordination within the groups.

A significant failing in the viability of social-groups appears to be that of cohesion and coherence. While the groups utilise 'office procedures' such as agendas, meetings and so forth, to achieve cohesion there is little evidence of normative behaviour in the research groups that will enable them to become autopoietic, in other words self-producing. While the individuals of the group have shared interests they do not adopt shared group attitudes, maintaining their personal identity. The groups simply do not have sufficient salience and network activity to generate themselves; however that is not to say that they could not be capable of achieving autopoiesis given greater network activity.

System closure is difficult to assess within social-groups. Firstly, they do not appear to be operationally coupled to any significant elements in the real world and are, therefore, probably able to maintain their identity (existence) despite any perturbations in the social environment. However, the social-groups appear to have poor viability with many weak areas, particularly a lack of normative activity, and so ultimately they cannot be considered viable systems with any level of cohesion or coherence. Put simple - if the key people running the groups stop doing so the groups would probably die. So on the one hand they appear to have achieved closure but on the other hand they do not appear viable.

7.3.3.3 Religious group-types

The most evident invariance of the religious groups is that ethos is strong by all measures and this has significant consequences.
“Group prestige did not appear to play a part in the way that they chose to define their identity. This was because both groups were founded in strong ideals and beliefs that supported the group.”

The maturity of the religious groups is significantly consistent. Strong self-categorization comparative and normative fit i.e. categorization processes generate normative behaviours in System 1 which are evident, not only from the average component scores, but also from the rituals, manners and conduct of the groups seen in the qualitative research. These normative behaviours generated a strong sense of ‘us’ in System 2 with high marks in the averaged components and qualitative evidence of depersonalisation2 (a sense of ‘us’) and strong group attitude.

The high levels of purposefulness of the religious groups, coupled with their mature normative behaviours, ethos and strong group attitudes created meaning for the group members who show high levels of self-understanding. This coherence is fashioned by good cohesion throughout the groups and is driven by normative behaviours, ethos and purposefulness but assisted by the equitable arrangements for power-sharing focused by high levels of social mobility and group resource coordination.

The groups are not exclusive, with members reporting that they are able to find a unique place for themselves within the groups and achieve high levels of self-value; however, the low levels of optimal distinctiveness indicate that the members are no always aligned with the group identity. They also do not see the group as united and suggest that there are below-average levels of harmony.

While religious groups do not readily admit to being more distinct from their comparable groups they nevertheless are keen to make themselves more discernible and tend to use the identity enhancing behaviour of in-group favouritism rather than out-group derogation to achieve this.

Lastly, religious group show high levels for planning processes and adaptation, socializing the group plans for the future.

Religious group appear to have achieved system closure. Driven by guiding ideals and beliefs and not dependent on any systems in the environment they appear well insulated from any perturbations that may occur. Organisational closure therefore exists, that is to say, changes in the environment may influence change internally but it will be managed by the system to maintain identity. With closure and evidence of maturity it is suggested that religious groups are viable social groups.
7.3.3.4 Institutional group-types

The institutional groups show consistently high levels of *prestige* that they derived from their strong *ethos* of ‘public service’; however, they categorize themselves by their sub-group for which strong *prototypicalities* exist and which the members see as distinct from the other sub-groups. The management are seen as another sub-group and when together, the sub-group members see the management as the *out-group*.

While within the sub-groups or ‘tribes’ there are reasonable levels of *cohesion* and *identity*, demonstrated by *normative behaviours*, *depersonalisation*, *group attitudes* and *purposefulness*, as a combined group the *cohesion* is reduced, to be replaced by *social conflict*, a lack of *purposefulness* and a high *algedonic signal*, which results in low group *self-esteem* and concerns about internal activities.

The variety of the *institutional groups* is further reduced by strict control between sub-groups. *Group resource coordination* and *social mobility* are low which limit the opportunities for individuals to find a unique place for themselves and build *self-value*. The poor *power-sharing* arrangements, possibly caused by the rivalries between sub-groups, results in further restrictions to opportunities; and as a consequence of these factors the members do not feel that they are engaged with their *institutional group* and tend to retain their *personal identity*.

The institutional groups show poor adaptation processes with a weak model of the external environment, few planning processes and low levels of autonomic adaptation and audit.

7.3.3.5 Charity group-types

The *charity* groups show a high degree of similarity across a fairly broad range. All charity groups show signs of maturity with strong levels of; *normative behaviour*, *distinctiveness*, good *harmony* and strong shared *group attitudes*. Charity groups see themselves as *purposeful* and united and derived high *self-esteem* from what they see as a ‘worthwhile’ activity. Members feel that their *groups’ identity* is well established but recognised that it does not have high standing in general but does develop *prestige* in the areas it was well known.

The individuals of charity groups manage to find a unique place for themselves within the group and derive *self-value* from a unique contribution, that they feel they are appreciated for; however they nearly all feel that they are at times ‘swamped’ by the group identity which they have to *inherit*.

Charity groups show signs of *system closure* and *viability*. They are not weakly operationally coupled to the environment in so much that should their cause diminish then their reason for
existence will have gone, however, all the charities seen were unlikely to achieve this in the short term.
CHAPTER 8 – RESEARCH SUMMARY

8.1 Aim of the Chapter

The aim of this chapter is to provide a summary of the invariances of the invariances. In other words those aspects that were found to be common across all groups-types and across all group-ids. These are then related to the assessment of the viability and the strength of salience of groups to give an indication of when salient social identities become viable; the research question. The chapter then continues with an assessment of the validity and reliability of the model used by examining the components, questions and design. It concludes with a revision of the model in light of these assessments.

8.2 Finding Viability

Since “maintenance of identity” is the definition of viability a correlation between age of group and the average viability score for groups would have appeared to have been an obvious confirmation of a group’s viability. However, this relationship showed only a weak correlation, see Section 6.10, and the length of group membership time showed no significant correlation at all. This means that, subject to the reliability of the research data, there is no easy assessment of viability by relating it to the age of the group.

This leaves two principle factors to determine viability. The average score of the components in the model and a separate assessment of the organisational closure of the group. We can add to these a third factor; the salience of the group, which the research proposed was a factor in viability, see research propositions Section 5.4.

8.2.1 The Invariances of Group-types

We finish our search for viability, therefore, with a completion of the synthesis process of the groups we have studied, looking for the invariances that suggest those that are viable and those that are not and relating it to the independent assessments made in the qualitative study of organisational closure and salience.

8.2.2 Social Identity Theory

Strong evidence was found during the research to support the effects of Social Identity Theory, although, at the same time it was found that the theory did not have requisite variety in that it did not explain all the evidence found.

Indication of both comparative and normative fit were detected, as was the need for distinctiveness. In-group favouritism was evident in most groups while out-group derogation was only really evident in collaborative groups, principally the business groups. Although this area was subject to suspected reporting bias, it would nevertheless appear that groups with
high levels of cohesion and maturity prefer in-group favouritism whereas collaborative groups with low levels of maturity utilise out-group derogation. Where the research differs from Social Identity Theory is in the recognition of several different group types. The research identified collaborative and mature groups but within these specifications is also recognised groups that were formed from a top-down identity or those that built the identity from their normative behaviours or collaboration from the bottom up. Further, some groups were a mix of these two processes both creating a cohesive local group from normative or collaborative behaviour while at the same time adopting or inheriting the high level identity components such as prestige and prototypicality from a higher level of abstraction. The study had not expected to find strongly salient groups with very low levels of comparative fit but high levels of normative fit. The pattern that was expected was that similar to the one found in religious groups where both types of fit were balanced. However the pattern observed in most of the charity groups showed only normative behaviour in System 1 and little comparative behaviour or drive to create greater distinctiveness.

8.2.3 Comparative and Normative Fit

Social identity theory does not focus on the distinction between those groups formed through comparative fit and those through normative fit, preferring to describe the process as part of a continuum with groups starting with comparative fit and eventually internalising the beliefs and values of the group to become normative, see Section 4.16. However, while this may be the case for some groups the research suggests that it is not the case for all. The effects of the environment, autonomy, power sharing and purposefulness all seem to determine the development of normative behaviour. The research seemed to suggest that on some occasions these factors are set when the group first forms and that no amount of internalisation of beliefs will turn a group formed by comparative fit into a mature group displaying normative behaviour. The reverse appears to also be true. The highly mature normative behaviour of charity groups, who despite demonstrating very short membership times and age of group have developed normative fit within a short period.

Lastly the assumption that many of the mechanism in social identity are on continuum between individual and groups implies a linear relationship, this is a simplistic view for which there is no evidence. System Theory suggests that in a complex system non-linear relationships and complex feedback loops may well exist. The interrelation between the many factors in Social Identity Theory has been assumed as linear and simplistic the evidence from the research is that it is anything but.

8.2.4 Prestige

The research uncovered unusual ways that groups assigned prestige. Charity groups, along with religious groups reported high prestige, although at the same time they readily admitted that they had little social standing except for “the people that knew them”. Both groups also
seemed to derive their self-esteem from doing something that was “worthwhile” rather than a more egocentric based definition that was seen in other group types. This does not fit the Social Identity model well and suggests that self-esteem and prestige, the driving force behind the theory, may be more complicated than predicted. In this definition the individuals involved seemed to be more self-actualizing.

8.2.5 Initial Group Formation

The circumstances of initial group formation would appear to have a significant impact on whether or not the group develops normative behaviour. Initializing factors such as organisational closure and structure, particularly power-sharing would appear to be major factors that allow groups to develop maturity. It would appear that those groups that are united with a strong purposefulness, shared group attitudes (prototypicality), a high level of coherence and cohesion indicated by strong group norms, rituals and the sharing of power within the group achieve maturity. A case study into group formation, however, would be required to examine this issue in greater detail.

Social Identity Theory relates much of its processes to the salience of group identity. These factors, namely: whether a group is collaborative or mature suggests that salience is not necessarily a sufficient indicator of the relationship between an individual and group. While salience provides an indication of the strength and relevance of identity it does not give an indication of the type of identity. Therefore in answering the research question the statement salient social identities is not a sufficient link to viability. A more appropriate phrase would be salient, mature social identities. The model suggests that Social Identity Theory does not have the requisite variety to model the full scope of groups and needs to be extended.

8.2.6 Creation of Identity and Self-Value

The research results suggest that the creation of identity within a viable group is a complex interaction between the values of the group and those of the individuals. People need to feel appreciated for a unique contribution by the other members of the group to fully engage but this contribution needs to be aligned with the prototypicality of the collective to maintain cohesion, see Section on self-value below. The more restrictions there are on group membership the less there will be unity, shared opinions and satisfaction with group membership and the less salient will be the group identity. Put simply the more a group is a ‘group’, then the more its individuals will derive social value from group membership. Social value can be inherited from a strong group identity or be an emergent property of strong group normative behaviour. However, normative behaviours in System 1, supported by strong shared opinions, satisfaction from group membership and a common group prototype are essential to maintaining a viable identity.
Key to the creation of viability is the autonomy of System 1. To achieve the requisite autonomy yet still be aligned with the identity of the ‘whole’ System 1s need to achieve “convergence of purpose” with that of the system. Reminding ourselves of the definition, autonomy is:

“...the freedom of an embedded subsystem to act on its own initiative, but only within the framework of action determined by the purpose of the total system.” Beer (1987).

The research found that the highest level of autonomy, that of an individual identity only occurred in small groups. An individual identity is one that is aligned with the group yet the person still feels they are ‘themselves’. This is achieved when people ‘align’ their personality with that of the group prototype, in other words the individuals collectively achieve ‘convergence of purpose’. It is possible that this can only occur in small groups because of the need to maintain requisite variety. The larger groups becomes the harder it is to achieve cohesion and coherence without greater vertical variety. In the viable groups, namely the religious and charity groups, an inherited identity predominated, however, this was accompanied by a high score for self-value. The individuals of the group reporting that they felt that they were appreciated for a unique contribution to the group but were not ‘always’ aligned with the group. From the definition of autonomy above, it would appear that the price of group membership to a large viable system was a degree of loss of personal identity. This would appear to conform with Beer’s concepts of autonomy and viability by being “within the framework of action determined by the total system”.

8.2.7 Environment

It was evident from the research that the environment played a significant part in determining whether individuals were able to be self-seeking in the groups that they joined. Some individuals were not always able to self-select the groups that they were a part of, for instance; individuals seeking a job might not get much of a choice as to which group they get to join. The lack of self-selection was most readily apparent in the research results amongst the business groups and had a significant impact on their relationship to the group. Comparing the business groups and charity groups where the former tended to lack self-selection and the latter were highly self-selected, the business groups showed lower levels of normative fit and higher levels of comparative fit while the charity groups showed the opposite. This would suggest that when people are unable to self-select the groups that they wish to join they are less likely to internalise the group’s beliefs and instead rely on comparative fit in a mode of collaboration. These groups found it much harder to establish a source of prestige, using branding, professional associations, or gender as a means of deriving self-esteem. The other groups demonstrating normative fit had high self-esteem and were less concerned about prestige and even in some cases harmony within the group.
8.2.8 Collaborative Groups

In general, collaborative groups demonstrated considerably higher levels of gossip and despite sometimes scoring high marks for harmony most groups nevertheless also demonstrated high levels of concern about internal activities. It would appear that whereas people readily form groups through comparative fit the mismatch of personalities, values and beliefs that this creates could possibly lead to high levels of internal unrest indicated by gossip. This was not always the case however, social-groups readily formed under comparative fit for collaboration and frequently demonstrated a clear prototypicality, however they did not show a high score for algedonic signal suggesting little concern over internal activities. This appears to be born out of a need to collaborate over interests only, and while some members of the group gained self-esteem and prestige from group organisation, most members maintained a personal identity and low engagement. This would appear to suggest that there are also several different forms of comparative fit groups with high and low levels of salience. What was not determined by the research, was whether or not the low-level of audit and algedonic signal seen in mature groups was an indication of low activity or whether these processes had been turned off.

8.2.9 Self-value

The research also highlighted the importance of the individual's self-value in the process of group formation. Although, the link between the individual self-value and the viability of groups still needs more research it is thought to be related to the power-sharing arrangements, the identity formation and the coherence in the group. Both group types assessed as viable, that is religious and charity groups, demonstrated individuals with associate inherited identities. That is a non-exclusive group with strong shared attitudes where individuals can find a place for themselves, however, they do not always feel that they are aligned with the group. Perhaps, this lack of alignment means that the group is always looking for stability.

Only one group type, that is the coffee shop business groups, demonstrated an associate individual identity. That is a non-exclusive group with strong group attitudes where individuals can both be appreciated and create an individual identity that is aligned with the local group prototype. However the lack of power-sharing with the higher orders of recursion and no autonomy prevent these groups from ever becoming viable.

Institutional and social groups demonstrated a clique personal identity. That is an exclusive group with low levels of identity where the individuals have not engaged or aligned with the group identity. These individuals identity descriptions provide a useful indicator of the internal group processes. It would appear that there is a small price to pay for viability with those individuals in a viable group being aware of how much they have to sacrifice for the group identity.
8.2.10 Group Age

The correlation between group age and the power sharing key process suggest that groups become more democratic as they get older or alternatively, if age is related to viability, that the more democratic a group is then the more viable it becomes.

8.2.11 The Viable Groups

The research identified two sets of groups that were considered viable social groups with salient identities. Firstly the charity groups and secondly the religious groups. Both these group types showed strong identity, coherence and cohesion. Both group types also demonstrated that they were operationally closed from the environment. These two group types spanned the range of age of group. The religious groups had been in existence for many years (average 313 years) while the charity groups had only been formed for a short period (average 22 years).

The institutional groups showed signs of operationally closure from their unique position in society. They also showed many of the signs of a mature group with strong evidence of normative behaviour, entitativity, and prototypicality but not coherence or cohesion. These latter issues were created by strong intergroup rivalry suggesting that the viable groups might have become pathologically autopoietic.

8.2.12 Viability of Group Types

The key factors in assessing viability were therefore placed in a grid to map out the state-space. These three factors, from the discussion above are, salience, maturity and organisational closure. The state-space map at Table 8.1 shows where the group-types fit with religious and charity groups the only two with high salience, high maturity and organisational closure. The red sector indicates areas of viability.
8.3 Assessment of Model Validity

This section examines the research components and model to assess how reliably and effectively the model determined viability.

8.3.1 VSM Scores

The averaged group scores for the VSM System demonstrated to some degree that the viability of groups could be detected from a questionnaire. Although this approach should be treated with great caution as there is as yet no understanding of the factors which would disrupt the stability of these systems, nevertheless, a quick snapshot of the group taken with the questionnaire could provide some evidence of what type of group it was and whether or not it was viable. If this was coupled with an assessment of the group's organisational closure a reasonable indication of the viability could be obtained. However, the model needs to be refined for this process.

Starting with the scores at group-type level the model indicated that religious groups had a viability score of 3.75 while charities had a score of 3.71, the business groups 3.57, institutions 3.46 and the social groups 3.39. Despite their very limited fidelity these scores nevertheless provide a crude relative measure of the viability of the groups that matches that found in the previous section.

Despite this, however, the research highlighted several deficiencies with the model which will be discussed in the following section starting with the individual components.
8.3.2 Components Lacking Correlations

There were four components that did not produce the results expected, they were; ethos, prestige, symbols, and prototypicality. While Symbols was removed from the research the others were not. The section below discusses their significance.

8.3.2.1 Ethos

*Ethos* the ‘guiding ideals and beliefs’ of a group, was anticipated to achieve the role of ‘encapsulating’ the main aspects of the group that create cohesion. Ethos was expected to ‘absorb the variety’ from the lower level cohesion processes in System 4 and 3 by ‘attenuating’ the behaviour of the individuals of the group and directing their activities in a specific direction; hence reducing their number of states. This matches closely the effect that ‘ideals’ achieve within a group. *Ethos* was therefore predicted to be part of the group cohesion/coherence and the system closure processes; although it could also be expected to be part of the individual/group identity formation process as groups could be recognised by ‘what they stand for.’

Examination of the correlations between ethos and the key-processes showed that ethos only had only one significant and weak correlation with the system closure process that would suggest that the greater the ‘guiding ideals’ in a group the greater the group was operationally closed. Examination of the correlations between the individual components, see Appendix 3 Table 3.216 a and b, only shows one significant association with distinctiveness2 which is part of the individual/group identity formation process which would suggest that the greater the ‘guiding ideals’ of the group the more the members notice a difference between their group and other groups.

When the relationship with VSM systems was examined, see Appendix 3 Table 3.265, ethos showed no significant correlations with any VSM System. The lack of correlations with ethos and other components, key-processes or VSM systems is noteworthy.

This component attempted to assess the strength of each group’s belief system. In VSM terms it attempted to measure the presence and strength of each group’s System 5; however, it also has implications in System 4, System 3 and System 2. This was a simple question that was fairly straight forward. Its internal validity generally seemed good as people did not have any problem answering the question. It was also considered that people were able to judge if their group had high or low ideals as this was a normal social attribute so its construct validity was also considered sound. Therefore its lack of correlation was not understood. Within the research ethos showed high scores with religious groups and institutions, which makes sense, however other group types did not feel that they had ‘guiding beliefs’. 
8.3.2.2 Prestige

Prestige was predicted to be one of the System 5 components of the individual/group identity formation process. As such it was expected to ‘encapsulate’ the ‘value’ of the identity to the group, in a similar way to how entitativity encapsulates the ‘uniqueness’ of the group, ethos encapsulates the ‘ideals’ and purposefulness encapsulates the ‘drive’. Examination of the correlations between prestige and the key-processes showed no significant correlations.

Examination of the correlations between prestige and the individual components showed that prestige correlates significantly only with group resource coordination suggesting that more resources (opportunities for development) are shared with those who need them the more the prestige of the group.

This component attempted to assess the level of prestige that each group felt they had. Prestige as a System 5 component was believed to be closely related to system closure. It was also considered to be closely associated with self-esteem and self-value the difference between the internal judgement of self/group and the belief of the group’s external standing. This was a straight forward question. Its internal validity was good as people did not have any problem answering the question and its meaning was never disputed. Only two people declined to answer the question so it was not considered sensitive. It was also assessed that people were able to judge if their group had high prestige as this was a normal social attribute; hence, it was considered that its construct validity was sound. Charities and institutions saw themselves as having high prestige and in both these cases it related to a feeling of “appreciation in society”.

8.3.2.3 Symbols

While ‘symbols’ was originally predicted to be part of the individual/group identity process it was removed due to a lack of validity. Examination of the correlations between symbols and the key-processes see Appendix 3 Table 3.266c, shows only non-significant and weak correlations with key-processes and other components see Appendix 3 Table 216 a and b.

At first sight this question seemed reasonable; however it suffered from a real issue of both internal and construct-validity. Most people associated signs or symbols with the associated organisation and not with the social group. In some cases where organisation and groups were aligned this was not an issue; however, where they were not aligned it was evident that people struggled to identify what was meant by symbols. For instance, one group in open conflict with its management had adopted an unruly dress style; another institutional group had clear signs of membership in the form of tattoos. While these were identified and discussed in the qualitative semi-structured interviews, they were not often readily apparent to group members. They appear to be adopted semi sub-consciously. The question was, therefore, rated very low for validity.
8.3.2.4 Prototypicality

*Prototypicality* is the model of the ‘ideal group member’ and in the research context is the ‘image’ held by the individuals of the group, (*group attitudes* is the ‘behavioural’ aspects of *prototypicality*). As a System 4 component *prototypicality* represents the model of the system ‘itself’ that must be held by System 4, it absorbs the variety of the *identity related components* in the systems below it by creating a single representation of the group identity – a stereotype. *Prototypicality* was, therefore, predicted to be part of the *individual/group identity* process. Examination of the correlations between *prototypicality* and *key-processes* at Appendix 3 Table 3.266c, however, shows no significant correlations.

Examination correlations between *prototypicality* and the individual *components*, see Appendix 3 Table 3.216 a and b shows only one significant correlation with *self-categorization normative fit*. While a connection between the System 4 *prototypicality* and System 5 and System 3 *components* would have been expected a direct connection to one of the important *components for identity formation* in System 1, nevertheless, makes sense - suggesting that the greater the group recognise themselves with shared group normative behaviours the greater they see an ‘image’ of a typical group member. This relationship is, however, not confirmed with the analysis of correlations between *components* and VSM systems which shows no significant correlations between *prototypicality* and VSM systems.

This was a question that asked people to identify if they thought there was a typical member of their group in order to identify if there was a recognisable group prototype. Only two people failed to answer the question and it did not experience any difficulty during form completion. There was no indication that the question touched on difficult areas; although it was possible that people did not want to provide an answer that they felt indicated that their group was stereotyped. It was also interesting that those groups who need to appeal to a wide audience for membership, *charities and religious* groups felt that they did not have a typical member. However, they also, in the *semi-structured* interviews were able to identify traits of members. Its internal validity was therefore considered good. The question’s construct validity, the degree to which it identifies *prototypicality* is, therefore, also considered good. However; the component produced several surprises. Firstly, although the data appeared to indicate differences between groups this was not supported by the significance tests. Secondly, the component was almost unique in being one of the few with hardly any correlations with the other *components*. It was expected that *prototypicality* would be closely related to the other *components* that related to identity, however, only a single correlations with *self-categorization* was seen. *Group Attitudes*, the other component that was considered related to prototypicality showed considerably more correlations and appeared to be a better determinant of prototypicality.
8.3.3 Components Not Understood

There were six components whose questions were not always understood by the interviewees. These were *algedonic signal*, *autonomic adaptation*, *group resource*, *self-categorization* and *distinctiveness*.

8.3.3.1 Algedonic Signal

This was a question that attempted to measure the amount of activity on the *algedonic network* of the group's viable social system. Only two people failed to answer the question, however, considerable number of people had problems with the question. In many ways use of the word "gossip", while technically correct from an academic standpoint, was an error from a social investigation perspective. It was very evident from the questions asked during the interviews that many people consider "gossip" a ‘bad thing’ and were therefore reluctant to associate their group with this activity even though they were given a careful definition before form completion. This definition explained to them that "gossip" meant the amount they talked about things that were a threat or a danger to their group. Despite this explanation there was a very real danger to the internal validity of this question from this bias and, therefore, the internal validity must be considered doubtful. This concern must carry over into the construct validity as well. Before the results were analysed it was considered that a more viable system would show greater activity on the algedonic network for the simple reason that this would show evidence of a better functioning system. The results of this question, even considering the doubts over validity, must throw doubt on to this theory and suggest that, alternatively, there may be a case that needs to be considered that greater activity measured on the algedonic network indicates a less viable system.

8.3.3.2 Autonomic Adaptation

This question asked people to assess how quickly the group adapted when things went wrong. Its strong correlation to *audit* could well be because both questions are very similar; *audit* asked “Does your group recognise when things are going wrong?” while *autonomic adaptation* asked “How readily does the group adapt when something goes wrong?” As such the questions validity is, therefore, subject to the same issues as *audit*. Its internal validity was doubtful because people found it difficult to answer, four people failed to respond, and its construct validity suffered from the problem that people could not readily visualise occasions when something had “gone wrong” let alone how the group had adapted. It was thought that *autonomic adaptation* was a sub-conscious reaction within groups, particularly as it relates to group norms, and therefore needs a different methodology to research. Like *audit* this question was probably best answered through qualitative methods.
8.3.3.3 Group Resource

This question attempted to establish if opportunities for self-esteem were coordinated. In most VSM systems System 2 coordinates the activities of the group, however, in social groups the activities focus around self-esteem, self-value and self-understanding. System 2 therefore has to coordinate the social norms of the group in relation to these values. The question had to be explained to people and, therefore, as it stands and without support from a researcher the question has problems with internal validity. It became apparent in the research that a group’s social norms, as opposed to business or social norms are very hard to establish, however, by asking people to remember when they first joined the group ‘what made them feel uncomfortable’ individuals were able to suggest the norms that differed from other groups. People appeared to have a sub-conscious ability to detect that they are transgressing a group’s norms and they adjust their behaviour to fit in – evident from a feeling of discomfort. However, when referred back to the question, individuals had no difficulty in knowing whether the group fairly allocated opportunities for self-esteem, the chance to speak, the chance to ‘do’ etc. The construct validity was therefore assessed as satisfactory. This component, however, would be best analysed through a case study to investigate how norms are managed within the group.

8.3.3.4 Self-categorization

The question was straight forward so the internal validity was considered reasonable; however, the construct validity was more of a problem. Are people aware of what the beliefs and values of their group are? While it was understandable that the religious or charity group members have a good understanding of this issue can we assume that the business groups are also similarly aware? The mixed results of this question were common to several other System 1 components and it could be that at this level the questions should have been more ‘behavioural’ related, i.e. what do you do, and less about concepts or feelings as this was the area where the group acts. The construct validity of this question was therefore considered doubtful

8.3.3.5 Distinctiveness

There were no apparent difficulties when the form was being completed, although, 5 people failed to answer this question. The internal validity was therefore considered sound; however, the construct validity was more circumspect. The question asked people to compare their group against other comparable groups and this was difficult for some. Charities and social-groups found it hard to relate to ‘other’ groups. As with the question of out-groups these groups do not seem to compare themselves that readily with others. To answer this question people need more of a focus; for example an idea of how they might be different. Determining if people were ‘actively’ trying to make their group distinct from its rivals also proved difficult. The question should have been more specific. This question
would benefit from a less direct approach and qualitative methods of investigation. Its
construct validity was therefore considered limited and would benefit from qualitative method

8.3.4 Components Misplaced

The failure to implement the command channels in the model, namely; the accountability
channel, the resource bargaining channel and the legal/corporate channel meant that their
components were misplaced. In the VSM, see Figure 2.4, the algedonic signal originates
from the accountability channel. This channel enables the System 1’s to let System 3 know
that the resources achieved in the resource bargain are accounted for. It heavily attenuates
the variety associated with System 1 achievement to only report when things are not correct.
The algedonic signal is shown emanating from this channel up through the meta-system to
System 5. In the model the algedonic signal was misplaced in System 3* which should by
rights only be sporadic audit. Similarly the component resource coordination was misplaced
in System 2 and not within its own resource bargain channel.

Autonomic adaptation was placed in System 3* due to the limited systems used in the
research, however, this could distort the values for System 3* and would, therefore, be
better placed as its own system independent of the others. Autonomic adaptation was
implemented to identify the sub-conscious element of ‘balance’ within a system as distinct
from the adaptation of forethought, anticipation and innovation that originates in System 4
and is managed by System 5 and the three four homeostat. It was modelled with the
component planning processes and the key process adaptation.

8.4 Refining The Model

The model performed to expectations and provided a valuable insight into the working of
social groups. Experience of the analysis suggested that there were three changes that were
required to refine the model. These were; improving the scope by adding recursivity, the
introduction of the command channels, and repositioning some of the components.

Adding recursivity to the model by including a level of recursion for the individual based on
Social Cognition would allow the model to represent the process of group formation more
effectively because it would show the interaction between individual and group. One of the
key features of the VSM is its recursivity. Failure to use this by simplifying the model to a
single level denies the research of significant assessment capability. The sum of the
individual may not be the same as the individual’s sum at a higher level of recursion. The
model should therefore be refined to show the sum of individuals at the person layer and the
individual sum at the group layer. Comparison between these two figures would provide for
improved diagnosis.
Recursivity would add self-reflection to the process of individual action and group formation. The addition of a level of recursion for the individual would require some of the components to be repositioned. System 5 at the lower level of recursion would need to be the individual’s ‘self-concept’ to represent their identity. System 4 would consist of components that represent the Theory of Planned Behaviour i.e. intentions, while System 3 would contain components that represent the psychological activities that manage an individual’s day to day life such as self-esteem, self-value and self-understanding attitudes, habits and desires. For the individual the System 2 component depersonalisation that manages group norms would be replaced by the equivalent elements of the ‘self-concept’ that provide cohesion for internal processes internal harmony and self-norms. System 3* ‘audit’ would be represented by Discrepancy Theory, see Section 2.8.

The second refinement to the model was the inclusion of the command channels discussed in the previous paragraph. Including algedonic signal and resource bargaining in a separate framework of the accountability and resource bargaining channels would allow these components to be monitored more effectively. Additionally including autonomic adaption in its own framework would avoid interfering with the measurement of the other sub-systems.

The final refinement to the model was possible repositioning of some of the components in different sub-systems. Prototypicality and group attitudes the image of the group represent two aspects of the system. They represent the ‘recursive self-reflective model’ of the group which places them in System 4 or they represent ‘identity’ which places them in System 5. One solution to the problem of where they are to be represented would be to divide them further into and identity component and a self-reflective component. Purposefulness was seen as the ‘drive to create group identity and cohesion’ and in light of the research was felt to be a Systems 3 component rather than a System 5 component as it helps define the group synergy.

8.5 Refining the Process of Analysis and Synthesis

The process of analysis and synthesis was very laborious but produced insight into the workings of social groups. It was felt important to maintain a methodology and the construction of each groups viability from the VSM Systems and key processes using the method identified in Appendix 3 was maintained throughout. This was to ensure that there was scientific method behind the process. No suggestions for improvement in the methodology, with the exceptions of improving the questionnaire, are proposed.

8.6 Summary of Chapter

This chapter identified the invariances across the groups starting with the aspects that related to Social Identity Theory. If commented that the theory did not fully match the different group types and group formations observed. The chapter discussed the difference
between groups formed by comparative fit and those formed under normative fit. It also examined the different factors on group formation including prestige, the environment and self-value. The social group state-space was then presented with an explanation of the position of the groups in relation to salience, maturity and organisational closure. The chapter then discussed the effectiveness of the model and made suggestions for its improvement.
CHAPTER 9 – CONCLUSIONS

All nice people, like us are ‘We’, And everyone else is ‘They’; But if you cross over the sea, Instead of over the way, You may end by (think of it!) Looking on ‘We’, As only a sort of ‘They’! Rudyard Kipling ‘Us’ and ‘Them’

9.1 Aim of the Chapter

This chapter concludes the research and re-examines findings in light of the research objectives and research question. It summarises the research findings and identifies their scientific significance and the contribution to knowledge.

9.2 Research Findings

The research identified two sets of group-types that it considered were viable systems; the charity groups and the religious groups. These showed all the signs of viability that the study had identified as necessary to constitute a viable system, namely; they were organisationally closed, had salient identities, and had established maturity of the key processes.

The research was able to map out the state-space of viability for all the groups studied, relating the key attributes of salient identity, maturity and organisational closure, see Figure 8.1.

Further the research identified those aspect that appeared as invariances across group-types that indicated group-formation or definition. Principal amongst these was the differentiation of groups into those that are formed using comparative fit and those formed with normative fit. The research concluded that only those that exhibited strong normative behaviours were able to achieve viability. It recognised that there were several possible means to achieving this state through the process of maturity, however, the research also indicated that some groups appeared unable to mature due to a lack of internal key-processes and that this could be related to the manner in which they formed and their environment (parent organisation).

The research found that there were several methods of group formation, some of which focused around the generation of self-esteem, as indicted by Social Identity Theory. In some self-esteem was generated from the social activities of the group while in others it was inherited from a higher order of recursion. Further the research observed that some groups achieved a combination of top down inherited identity and bottom up generated norms.

While the study confirmed many of Social Identity Theory’s principles it also found some limitations. The first shortfall has already been discussed and involves the greater number of group definitions and formations then is recognised under the theory. The second relates to
the definition of *self-esteem*. While Social Identity posits that *self-esteem* is the principle driver for group formation the research found that the definition of *self-esteem* and prestige varied widely across the *group-types*. Whereas *business* groups appeared to follow the theory exactly and attempted to associate with the group that gave them the greatest social standing, *charity* groups and *religious* groups were not concerned at all with social standing and were driven by what they considered was “worthwhile”. The lack of a focus on status or prestige meant that these groups strong *purposefulness* and *sense of identity* were strong enough to absorb a lack of harmony within the group. The last discrepancy identified with Social Identity through its study by the VSM is the assumption that its processes are on a continuum from individual to group. Complex systems are dynamic and non-linear and the assumption that there is a linear connections was not evident in the research, in fact the evidence of the fixed nature of many groups basic identity definition and its relationship to the environment in which it was formed leads to the opposite conclusion, that the connections between the many processes could be stepped functions and non-linear. In other words while people are dynamic and adaptive the groups themselves appear to find ‘stability’ in their environments. What conditions could cause this stability to change were not determined by the study.

The research also found that those group who showed *maturity of internal processes*, that is *normative behaviour* that leads to the development of *group norms, rituals and shared attitudes* to create a strong sense of identity and internal *cohesion* and *coherence*, did not necessarily take a long time to develop. While the *religious groups* had an average age of 313 years the *charity groups* average age was only 22 years. Further evidence of strong *key processes* were evident in some very newly formed groups. Which suggested to the research that the circumstances of group formation may have a significant effect on whether the groups can go on to develop *mature processes* and *viability*. The converse of this was also suggested by the research, that is that some groups would never be able to form *viable* groups because of their construct.

The study made independent assessments of the *organisational closure* of groups and concluded that it was a key factor in the creation of *maturity*. It also determined that power-sharing in groups was a key factor in their development. The ability for each individual of the group to find a place for themselves was found to play a significant role in group function and did much to define the type of group. Those groups that were found to be *viable* demonstrated strong *shared group attitudes*, were *non-exclusive*, and generated *self-value* for their members. The members, however, also reported that they were not always *aligned* with the group identity. An *aligned individual identity* would demonstrate a high level of *autonomy* in System 1 because it would show “convergence of purpose”. The *inherited identity* adopted by the two religious groups and the five charity groups appeared to be the ‘cost of group membership’. That is the *vertical variety* required to create *cohesion*. 
Returning to the different types of groups discussed at the start of the assessment, the engagement of group members was found to be very different between group types and was related to the power sharing arrangements, the identity formation and the coherence. The research showed that social and institutional groups retained a personal identity whereas business groups ranged from a highly engaged individual identity that was aligned to the group identity to a disengaged and unaligned identity depending on the key factors discussed. Social-groups scored the lowest viability of all the group types and this was attributed to the infrequency of their meeting which directly impacted on the salience of the group identity to the individuals of the group.

9.3 Research Objectives

The study now returns to the research objectives to assess the achievement of the research aim. Working through these we have;

- To identify a research paradigm and approach necessary to address the research question.

This was achieved in Chapter 3. The research recognised that a pragmatic philosophy was needed to relate a constructivist Social Identity Theory to a structuralist VSM paradigm using a dialectic argument. The radical epistemology of the VSM was used as the means of understanding the viability of the groups studied. It was further recognised that to be able to examine the data from a complex system an approach using abstraction and synthesis was be required.

This philosophical approach was felt to work well and provided the correct framework for the research allowing it to fulfil its requirements. As the research unfolded confidence grew in the ability of the VSM to demonstrated the ability to represent the psychological activities of Social Identity Theory and Social Cognition. It became apparent that not only could the VSM represents organisations but that it could represent any self-reflective system, in particular, it could represent how humans make sense of the complexity of their world.

- The more the research developed the greater it was felt that there was substantial truth in Yolles (2004) comments that the VSM was very much its ‘own epistemology’ in that it provides a framework for not only understanding viability but also concepts of variety, homeostasis, autopoiesis, autogenesis, autonomy, organisational closure, and identity. Labelling the VSM with a single philosophical standpoint, such as ‘functionalist’ was, therefore, incorrect as it could be adapted to represent all the philosophical positions. More, importantly not only could it represent systems from these different philosophical approaches it could represent the viewpoint of the philosophical approaches themselves. This was because each of these are basically no more than
different views of how humans construct their reality. However, because it adopts a model of ‘structural representation’ with a meta-system the VSM is not suitable for representing the post-modernist standpoint although in the research it uses this standpoint to represent the complexity of the environment. To create an influence map of the psychological activities of social group behaviour from Social Identity Theory.

The systems map of Social Identity Theory was developed in Section 4.6 and mapped to the social state-space in Section 4.10. The psychological activities of Social Identity Theory were mapped as independent activities, however, and not related to those of Social Cognition with which there is a clear overlap. It is felt, therefore, that the systems map created was only a partial representation of the means by which individuals interact with their social environments. Furthermore, constructing an ‘influence map’ of this type is itself limiting in that it attempts to show the complex relationships between many psychological activities as though they are a simple set of feedback loops. It was felt that the true complexity of the situation, which is based in human cognition, could only really be understood through a recursive network, as suggested by von Forester (2004). There is therefore a need to tie the various ‘levels’ of cognition that are evident in social interaction into a more comprehensive model. However, the influence diagram is limited in its ability to do this while the VSM is designed to show recursive structures. It might be more effective therefore to create the model directly in the VSM.

- To utilize the systems map of social identity psychological activities to develop a Viable Systems Model of social groups with salient identities.

- Section 4.8 to 4.28 developed the Viable Systems Model of Social Identity. The issues with this model were discussed fully in Section 8.4. The principle problems were the lack of recursivity and the failure to represent the command channels of accountability and resource bargaining with the appropriate components. Placing the components that represented these channels in other sub-systems caused these to be misrepresented, particularly System 3* the sporadic audit system. To develop a research design, consistent with the research philosophy, approach and strategy, to examine the research question.

The means by which viability could be measured led to the identification of the research methodology of taking a ‘snapshot’ of a complex system by using the multi-strategy sequential explanatory fixed design that was developed in Chapter 5. This process produced mixed results. While some components stood out others were more elusive. The difficult components to detect were ethos, prestige, symbols, and prototypicality. These components appeared to have good internal and construct validity yet failed to produce significant correlations with other components, see Table 6.4. The failure could not always be
explained. Several components were misrepresented in the model because the command channels were not implemented. These were algedonic signal, autonomic adaptation, group resource. Several components exhibited poor internal or construct validity these were self-categorisation and distinctiveness, see Section 8.3. These were difficult to implement because of their abstract nature.

Attempting such a broad spread of independent variables was always going to be challenging, however, combining the components into key-processes produced results that were significantly more valid than those of the individual components themselves and provided a degree of redundancy in the methodology. Looking at processes rather than just values appeared to be a more effective design, although it could be argued that the methods complemented each other.

Identifying the right question for each component again provided a wide range results. Some questions were immediately apparent to the interviewees and produced accurate valid results while others appeared too abstract, see Section 8.33. This area would require greater development for future research.

- To conduct research and assess the validity of the model to identify viable groups with salient identities.

The conduct of the research was uneventful although time consuming due to the requirement to interview groups in situ to maintain context. This was often difficult to arrange. The abstract nature of the study also required a high degree of intervention with interviewees from the researcher during the semi-structured interviews. The research process was therefore not easily generalised. Once the research was completed the validity of the model proved satisfactory in identifying those groups with salient identities that were viable, see Section 8.3. However, the model had several shortcomings that need improvement and Section 8.4 made recommendations for the development and improvement of the model for future use.

- To identify if any groups with salient social identities can be assessed by the model as viable systems and if possible to assess which factors affect the development of viability in groups with salient social identities.

The religious and charity groups were identified as viable systems within the meaning of the VSM. Section 8.2 identified the invariances of the social groups that indicated the formation of viable systems. The key factors that determined the viability of groups with salient identities were the organisational closure of the group and its maturity. Maturity was evident in groups that were united with a strong purposefulness, shared group attitudes (prototypicality), a high level of coherence and cohesion indicated by strong group norms,
rituals and the sharing of power. In other words strong behaviour across all of the VSM sub-systems. The Research Questions Revisited

The introduction identified the difficulty of conducting research on complex systems, particularly social systems. The achievement of the research objectives above recognises that, in part, the research achieved its aim, although as is often the case we are left with more questions.

The model used in the research demonstrated several well know properties of Social Identity Theory. It was able to show self-categorization comparative and normative fit, meta-contrast and perceiver readiness, the need for self-esteem, distinctiveness, in-group favouritism and out-group derogation. It showed the collective use of ‘us’ and optimal distinctiveness, social creativity and social conflict. However, it also showed much more, that has been catalogued in the previous sections.

The temptation to believe that we have uncovered permanent, fixed process that dictate the formation of social groups is very alluring. However, the research philosophy, approach and design forces us to recognise that we are dealing with a complex dynamic system and the synthesis process should have convinced us that these processes are on-going and non-linear. Stafford Beer suggests that “we constantly take a high-variety system, slash down its variety in order to penetrate its invariance, get the wrong answer – and then project the wrong answer onto the system”. Our trait attribution and cognitive biases have evolved to skew this process to reduce the risk of danger to ourselves, however, since “we [humans] have no choice but to hold in our heads low variety models of high variety realities” (1979 p 44) we can choose to either face the discrepancies of our beliefs systems that our observations show us or ignore them;

“we can either casually select aspects of the new variety generated that reinforce the low-variety models in our heads or we can actively search for manifested states of the systems that clash with that model and constantly adjust it” Beer (1979, p44)

9.4 Contribution to Knowledge

While the research started out to use and endorse Social Identity Theory it quickly uncovered the situation described above that Social Identity Theory does not have requisite variety to explain all the effects seen and had to be combined with Social Cognition to explain them. The recommendation from the research is that a more sophisticated model of human social activity built on the framework of the VSM would provide a significant step forward in the study of human social behaviour and bring the two theories into alignment.
That this is possible is indicated by the research uncovering the role of ‘gossip’. While this area has been covered in Social Cognition as a separate study it has not really been introduced into other disciplines or areas of psychology and is not considered relevant in Social Identity Theory. Modelling the formation of social groups forced the research to find a process that provided an accountability channel and an algedonic signal and ‘gossip’ provided an answer. Without the VSM’s framework this would not have been achieved. The use of the VSM similarly identified the complexity of group formation and the role of maturity of norms and the use of inherited identity to maintain prestige.

While recognising the achievement of identifying viable social systems the most significant feature of the research is easily lost. That of undertaking research on social systems at all. A task abandoned by Geyer (1995). The work of the Social Identity and Social Cognition scientists in mapping the state-space of social behaviour opened the door to allow cybernetics in. Cybernetics relies on states, they are its basic constituents and the factors that move a system from one state to another are its processes known as the trajectory of the system. The Viable Systems Model provides a framework on which to hang these states and their associated processes that is missing from psychology and sociology. Demonstrating that this is feasible is the hope of this research.

Conducting research on complex systems needs to be recognised as the problem it is. The research methodology of creating a narrative from quantitative and qualitative data synthesised in recursive layers to identify the invariances provides a scientifically repeatable method that is falsifiable (Popper, 1959).

The research contributed to one final area of knowledge that cannot be imparted easily in the thesis. That of the implicit knowledge of the researcher. The study not only provided insight into the workings of groups, the VSM and psychology it also brought understanding of research methodology and philosophy.

9.5 Generalisation

The methodology developed during the course of the research for examining the viability of social groups should be applicable to wider areas of study into complex social systems. The research methodology itself involved the process of induction, taking each layer of findings to the next level as a form of generalisation, however, the process ensured that the findings were grounded in the data and confirmed by the qualitative work. Taking the findings to a higher levels of generalisation is undertaken in the final stages of the research in this chapter where the research findings question the established theory. The methodology however is not easily simplified as it is recommended that it requires an experienced social researcher to undertake the semi-structured interviews, an understanding of the VSM and the psychological activities of Social Identity Theory.
9.6 Research Applicability

The VSM provides a powerful diagnostic tool but is limited in other areas like design (Achterbergh and Vriens (2011). The study focused on answering the research question “are social groups with salient identities viable systems?” Taking the next step to use the findings in a practical application is difficult to assess. The research originated because of a desire to find out why and where social groups formed and developed during change management. The study demonstrates some of the factors involved and also identifies that changing a group from one construct to another, i.e. from collaborative to mature, may be very difficult. The study does provide change managers with a diagnostic tool to identify the sub-groups and their identity components, but is does not provide any indication of the steps to go from there except to establish work groups based around the construct of charity groups or religions.

The surprise of the research was the dynamic and purposeful nature observed with the coffee shop teams. These showed good levels of many of the key components but were not considered viable because of a lack of organisational closure and power sharing. Contrasted with the institutional groups where there was little engagement and constant rivalry they demonstrate a good model for any organisation.

The important question is why would a manger what to establish viable groups? The viable groups in the research showed the highest levels of purposefulness, engagement and motivation and they are self-producing and self-steering. These would be sound reasons, enough for any manager if they were prepared to let go of power. The one group not investigated where this occurs was cooperatives and this requires further work.

The approach, design and methodology of the research proved effective and

9.7 Research Limitations

The research aimed to conduct an exploration of as wide a spectrum as it could within the research scope to uncover areas of interest. While it did this to a degree the limited data obtained from a small area creates several questions on the extent of its validity. There is no indication in the study of how the findings would translate to other areas, cultures, countries or organisations. Further the research used small samples, again a limitation of the research scope which could have biased or exaggerated the findings. While the theoretical underpinnings of the research have proved strong the research itself must be recognised for what it is, a single person research project with limited time and resources. Groups studied needed a wider selection of environments and group types to be able to tease out the invariances. Methodology of taking a ‘snapshot’ provided a surprising insight into the functioning of the groups, however, it should be remembered that
9.8 Recommendations for Further Research

A further study with broader data collection and multiple case studies into the different group-types and their formation is required to build further evidence. The research points to the study of cooperatives where there are better opportunities for power sharing and self-value. A case study needs to be undertaken into the development of groups to provide greater detail on the creation of maturity and initial group development appears a highly significant area.

9.9 Chapter Summary

This chapter reported the research findings and confirmed that the research objectives had been achieved and hence the research question had been answered. It re-examined the conduct of the research and discussed its contribution to knowledge, research applicability and limitations. It concluded with recommendations for future research.
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