Creative Management of Creative Management: A Critical Systems Approach

being a Thesis submitted for the Degree of PhD

in the University of Hull

by

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February 1997
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I have come to realise that the PhD process is not a solitary venture. It can neither be attempted in isolation nor can it be undertaken so as to impact only on the writer. While my intention was always to minimise the adverse effects on those people special to me, I know that this was not always the outcome. A lot has happened since I embarked on this research project; I am not the same person who began this work in 1992. Life has really thrown a ‘mixed bag’ at me since that time. However, I hope that those who shared my worries and concerns, have also been able to rejoice with me during the exhilarating times when progress was more evident.

There are many people who have played important roles during this venture - some knowingly, others in blissful ignorance. First of all, I must acknowledge my husband, Phillip. Although, there were times when I felt our relationship was being severely and unfairly tested, his unquestioning love and support have helped to see us through. I pray that I am able to provide the same strength for him, should the need arise.

My parents and sisters must also be acknowledged. They too have been towers of strength and have encouraged me every step of the way. Their support was invaluable. I am lucky to be part of such a caring family.

The research process has also helped me to realise the value of friendships. I thank those who have been true friends to me and who have carried some of the burden with me. Although I pay respect to Bob Flood in his supervisory capacity and appreciate his support, I also thank him for his friendship.

During my PhD studies I came into contact with lots of other people who also provided many things for me - inspiration, guidance and opportunities
to experiment in their organisations. An organisation which has played a large part in my life in the last three years is Hull Council for Voluntary Service. A trip which had a significant impact on me was one to the States in which Russell Ackoff and Gareth Morgan featured; it was an honour to spend time with them.

I thank all these people, and more, for the parts they played. They must share with me any credit for this work.

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ABSTRACT

This thesis draws on current research from the systems world - that of Critical Systems Thinking - in such a way as to bring the study of creativity into a new era. Recognising a novel link between these two major fields of activity has enabled a new form of creativity to be both developed and operationalised; that is, a form of creativity which can claim to have a sound theoretical base and to be practically useful. 'Critical creativity' is put forward as a form of creativity which is worthy of pursuit today. Based on similar philosophical foundations to those of CST, critical creativity is underpinned by four main principles - a systemic principle and principles founded on participation, reflection and human needs.

While it is appreciated that some creative problem solving approaches, [Ackoff's 'idealized design' and Morgan's 'imaginization', for instance] implicitly rely on critical creativity, this is not sufficient for the practising manager. Only the explicit incorporation of critical creativity will ensure that creative approaches are used appropriately in each context. Total Systems Intervention (TSI) is shown to provide an overarching framework which integrates all creativity centred approaches in a critical manner; a meta-methodology which promotes the practice of critical creativity. TSI is therefore capable of guiding managers to 'successful' choices and implementations during creative problem solving.

A comparison of two case studies - one in which creativity per se was practised, and another in which critical creativity was strived for - emphasises the benefits of explicitly pursuing the latter form. Associated difficulties from accepting the guidance offered by TSI are explored, and subsequent realisations are used to enrich the 'theory-practice' cyclic process of critical creativity. Such guidance is not intended to be sterile and staid: indeed, this guidance will, itself, incorporate creativity. It is concluded that TSI provides a framework for the 'creative management of creative management'.

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Introduction

Imagination is more important than knowledge.

To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science.

Albert Einstein

[Cited in Morgan, 1993]
CHAPTER 1

1.0 Aims of Thesis

The main aim of this thesis is to provide methodological guidelines for practitioners and researchers of creativity enhancing techniques who seek to manage the diversity of related subject matter in a critically reflective manner. This thesis is a contribution to the creativity movement. In enriching the discipline of creativity by the introduction of concepts from recent developments in problem structuring and problem solving approaches, the nature of the pursuit of creativity is modified. This modification brings greater anticipation of the discipline of creativity satisfying some of the organisational needs of the 21st century.

Certainly, over the last fifty years there has been much activity in formulating problem structuring and problem solving methods which are able to reflect the changing priorities of the users. While the Second World War and the Post-War industrial experience were useful vehicles for demonstrating the power of quantitative approaches, the subsequent years heard a cry of dissatisfaction with their limited application in business and industry. There was a requirement for other, more appropriate, problem solving approaches. With growing appreciation of the interconnectedness between hard and soft issues, and recognition of the benefits of adopting a holistic view, Systems Thinking emerged and is now established in some quarters as an effective tool for problem management. Systems based methodologies have been developed, followed by their incorporation into coherent frameworks, alongside further research into systems theory. It is recognised that such thinking has not reached its full potential. Today, there is growing interest and activity in the systems world as an increasing number of authors redevelop their theories with systems thinking more overtly at the core (Senge, 1990; Morgan, 1993; for instance).
Chapter One

As organisational life has became more complex, seldom, if ever, are problem situations reproduced. Originality and novelty are essential for successful management of such complexity; creative thinking offers these qualities. While attention has always been paid to creativity within the realms of the Arts, creative thinking has now become an acknowledged practice in organisational activities - problem solving being one such activity. Understandably, then, along with the pursuit of systems thinking, there has been a steady undercurrent of interest in creative thinking.

Particularly since 1980 there have been rapid advancements in the systems movement. Soft Systems Methodology of Checkland, (Checkland, 1981; Checkland & Scholes, 1989) Critical Systems Heuristics of Ulrich, (Ulrich, 1983) and Total Systems Intervention of Flood and Jackson, (Flood & Jackson, 1991; Flood, 1995(a), (b)) are but three recent developments in systems based problem solving approaches. However, whilst systems thinking has moved on significantly, an undercurrent of creative thinking has not maintained the same rate of flow. While systems approaches to creativity, in various guises, have been introduced (Rickards,1985; Csikszentmihalyi, 1988; Gruber, 1981; Gruber and Davis, 1988) they do not benefit from the most recent developments in systems thinking - namely that of Critical Systems Thinking. My piece of work readdresses the issues of creative thinking so as to bring them up to date with contemporary systems studies.

I bring creative studies up to date through the introduction of ‘critical creativity’. The concept of ‘critical creativity’ is spawned from Critical Systems Thinking. It is a concept which offers methodological guidelines for managing the diversity of the discipline of creativity in a reflective manner. In particular, critical creativity encourages an awareness of the context in which practitioners are operating so that an appropriate choice of creative approach can be made. This concept is central to the thesis.

Aims of the Thesis

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2.0 The Structure

This thesis is consciously derived from a cyclic learning process in which there is reciprocated enrichment between theory and practice; however, for increased clarity in presentation there has been some linearisation of the process. Subsequently, the thesis is presented in four Sections: each individual Section tells a story in its own right and brings an original contribution from a selected standpoint; from practical case studies or from the associated literature, for instance. But, together, the synergistic properties of the four Sections relate a much finer story. This introductory chapter outlines the structure of the thesis and details the aims of each Section.

Chapter 2 provides a further preliminary discussion before the main thrust of the thesis. It describes the research methodology employed; participatory action research being the dominant approach. However, as will be shown, this research strategy was not applied in an isolationist manner. It was able to incorporate a variety of research steps and styles which were consistent with my deeper argument. Having conveyed how the research activities were undertaken, the hypothesis starts to be unfurled. However, discussion of the research methodology is not confined to Chapter 2 - subsequent chapters include reflective comments on its effectiveness to the work undertaken.

2.1 Section I: Development of Critical Creativity

The purpose of Section I, comprising Chapters 3 and 4, is to set the scene in which the hypothesis is grounded. Drawing on at least two fields of academic research - 'creativity' and 'problem solving' - Section I develops the concept of 'critical creativity'. Chapter 3 is centred around a literature review of firstly creativity and, secondly, the process of problem solving. By synthesising these reviews it is shown how, for future effective application, creative problem

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1 I use the term 'isolationist' at both a theoretical and methodological level to suggest that I did not impair the choice of research strategy by either deliberately subscribing to one paradigm nor to favouring one particular strategy.
Chapter One

solving will benefit from the inclusion of critical creativity. Chapter 4 extends the creativity literature review further by examining a range of creativity enhancing techniques in a typological exercise. A taxonomy, according to the level of focus of their purpose, is put forward as a means of organising the numerous techniques. In presenting such an extensive range, the need for a form of creativity which is founded on philosophical foundations similar to those of Critical Systems Thinking (CST) becomes more apparent.

2.2 Section II: Total Systems Intervention & Critical Creativity

The aim of the second Section is to demonstrate, at a theoretical level, the connection I have made between systems studies and creative studies. This is the Section in which the major original contribution is made. A selection of problem solving frameworks, each one relying on creative thinking in their ‘successful’ application, are introduced in Chapter 5. Exploring the extent to which their applications critically employ creativity, it is found that there is already some integration at various methodological levels. However, this is due more to the intuitive behaviour of the practitioners, rather than in response to any methodological guidelines. The proposal of a systems based problem solving framework known as Total Systems Intervention (TSI) for providing appropriate and explicit guidance for the practice of critical creativity forms the basis of Chapter 6.

2.3 Section III: Creativity vs Critical Creativity

It could be argued that the presence of creativity per se in a problem solving process is beneficial, and the perceived sophistication of critical creativity is superfluous to requirements. The aim of Section III is to communicate the message that when critical creativity is explicitly practised (rather than intuitively, as in Chapter 5) both the process and outcomes are considered to be more creative. So, in this Section, the theory of the pursuit of critical creativity discussed in Chapter 6, is applied to organisational problem
Chapter One

solving. Two case studies, in which the author played a major role, are shared.

Chapter 7 relates a project in which a process of creative problem solving was undertaken with a Council for Voluntary Service (CVS) team; it was undertaken at a time when the concept of critical creativity was in the making. Chapter 8, carried out some 18 months later when critical creativity was in a reasonably developed form, tells of a creative problem solving 'event' with a Water Authority. An outline of the structure of each encounter, the detailed activities and the outcomes are given. While it can never be said that, with the benefit of hindsight, the approach to any project would not have been modified, there is an underlying intimation that if the CVS project, in particular, were modified in the light of work on critical creativity, then it would be tackled in a very different manner and bring much improved outcomes.

2.4 Section IV: Creative Management of Creative Management

The final Section of the thesis brings the arguments and discursive strands of the previous three Sections together. It is a platform where theory and practice are no longer deliberately separated. This is where they are purposely shown to enrich one another. A means of linking the theoretical aims and the practical results is devised. A system of measurement is not easy to define for studies related to creativity; however, Chapter 9 provides a framework of evaluation and reflection by which the practices in Section III can be evaluated against the intentions of the theory. It attempts to take into account the issues which Section II is promoting in its bid for theory to inform practice, by overlaying the principles set out therein. This penultimate chapter provides an opportunity for contemplating more intangible aspects, as part of the feedback process from the application to the underpinning theory.

The final chapter presents the conclusions of this research project and emphasises the contribution I have made to the creativity movement. Chapter 10
also puts forward suggestions as to where future research efforts could be focused if the creativity movement is to maintain, or increase, its current level of momentum.

3.0 Content of Chapters

Having given an overview of the Sections of this thesis, I now move on to look at their content in a little more detail.

3.1 Chapters 3 & 4

Creativity has aroused interest in many diverse disciplines. Much action was stimulated by a Presidential address in 1950 by Guilford, of the American Psychological Association, in which he repeated Ribot's plea of 1906 to end neglect of the study of creativity. Consequential interest was immediate and abounding, but not short-lived. In fact, Parnes (1992) has been able to characterise "historical stages of progress in the deliberate development of creative thinking" and identifies the four decades of activity as the following: 1950s as the hope and hunch stage, 1960s as the research, replication and report stage, 1970s as the widespread application stage and 1980s as the mainstream application stage. He predicts that the 1990s will be characterised by "a growing sophistication in the widespread application of creativity" (Parnes, 1992). My thesis is from the 1990s and the sophistication that I argue it brings is a complementarist approach called critical creativity. While there have been lulls in activity, recognition of the impact that creative thinking has on organisational competitiveness, and thus on organisation viability, has no doubt helped to sustain momentum in the study of creative thinking. In some cases, as in this piece of work, it has undoubtedly influenced the direction of study.

It is not surprising then, that there is a wealth of literature which has arisen from various authoritative schools of thought; each school assuming its own perspective in its bid to progress the study of creativity. Chapter 3 prepares
Chapter One

the stage, so to speak, by presenting a coherent summary of major issues from
creative studies. I trace some of the major changes in understanding of the
concept from times gone by to the current day, and beyond; surfacing some of
the assumptions made in Parnes' aforementioned stages of development.
Examination of expressions for creativity used in notable forums encourages
derivation of an operational definition which underpins the rest of the thesis; an
expression for creativity which is appropriate in the context of organisational
problem solving. Repeated interconnectedness of one study with another cannot
be ignored; it has sometimes been difficult to 'unravel' the literature and
acknowledge its true origins. However, further analysis of available sources
exposes unexplored and undeveloped aspects, to date, serving to emphasise the
boundlessness of any research project which incorporates studies of creative
thinking.

Introduction to the theme of problem solving is undertaken in a similar
manner. As with creativity, there have been trends in the process of problem
solving. Acknowledgment of the increasing complexity of life has undoubtedly
influenced our understanding of the process, and the demands made on it.
Recognition of the potential benefits of problem solving frameworks in guiding
the management of complexity understandably triggered the release of a plethora
of associated material. There is access to an abundance of plausible approaches
which could be applied to manage the prevailing difficulties and messes. Even
though they have been born from a range of origins and may, at first sight,
appear to be very different, they have naturally been developed from the
acknowledged interpretation of 'problem' and the 'problem solving process' of
their day. It is the roots of their development which are brought to the reader's
attention in the second part of Chapter 3. As will be shown, creativity is now
becoming a welcome and integral part of the problem solving process. Given
that this thesis addresses issues pertaining to organisational problem solving, I
develop an understanding of creativity in an organisational setting in this
chapter. I also propose a form of creativity which will be useful in the coming
decade and surface the role of creativity in problem solving. Bringing these
dependant together leads to an introduction to ‘critical creativity’.

Chapter 4 reinforces the need for a different form of creativity. There is
widespread acceptance that creative processes can sometimes be initiated and
couraged by ‘creativity enhancing techniques’. Although common in
purpose, such techniques can take various forms. In order to start dealing with
the diversity of approaches, I have organised them into a taxonomy which
distinguishes between their level of focus. For instance, a technique may rely
on stimulating creativity from the level of the organisation while another may do
likewise from the level of the mind. While this systematic organisation of
creativity enhancing techniques may take us some way towards more reflective
practice, there is a need for more soundly based guidance. Again, the practice of
critical creativity could satisfy this need.

3.2 Chapters 5 & 6

Chapter 5 is a platform, from which to campaign for the introduction of
critical creativity. Additionally this chapter serves to progress our understanding
of the importance of context dependency in creative problem solving. This
chapter is the final part of the build up to the setting out of the nature and
principles of critical creativity in Chapter 6.

A handful of frameworks which have been usefully employed in the
creative management of organisational complexity are explored in Chapter 5.
They have been selected for exploration on the basis that, between them, they
cover a range of levels of purpose and demonstrate the generation of ideas,
images, or both. In addition, there is anecdotal evidence that these frameworks
have been able to fulfil users’ expectations - creative solutions have emerged
and/or creative processes have occurred from their application. Each framework

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is outlined and an example application is presented. Some have been applied in
the voluntary sector, others in the profit making organisations. This leads us to
consider more closely the context in which they have been employed. Practitioners of these frameworks have intuitively reflected on the context in
which they are operating. These reflections have influenced their choice of
approach and increased the chances of ‘success’ of the approaches. Incorporating a reflective element into the development and practice of a creative
problem solving approach indicates a move towards practising critical creativity.
A summary of Chapter 5 brings together the strands of discussion around
context dependency.

In Chapter 6, attention at last becomes fully focused on the concept of
critical creativity. Beginning with a reminder of the requirement for such a form
of creativity and the gaps it will fill, the chapter goes on to introduce critical
creativity from a variety of viewpoints. Its philosophical roots, similar to those
of Critical Systems Thinking, its nature and its underpinning principles are
presented. Next the systems based problem solving framework known as Total
Systems Intervention is described. By following the three Modes of this
framework in a hypothetical case study, it is shown how TSI can guide the
pursuit of critical creativity.

3.3 Chapters 7 & 8

Chapters 7 and 8 bring the hypothesis into the practical forum for a
process of analysis, testing and validation. Each chapter introduces a case
study: the intent is to relate one wherein creativity *per se* was practised and one
in which critical creativity featured. With each chapter structured through the
framework of TSI, there is a noticeable imbalance between the three Modes for
the first case study. The latter brings more equilibrium.
Chapter 7 shares an account of an evaluation exercise which centred on Checkland's (1981) Soft Systems Methodology (SSM). Within this approach, there are opportunities for creative thinking. I put forward that, during this exercise, I did not consciously take account of the relationship between the context of operation and the achievement of creative potential. In short I did not pursue critical creativity. Even so, the evaluation was still considered to be a 'success' by both the participants and by myself. However, the process of critique framed by TSI has enabled a retrospective examination of the activities with the new learning thus generated being implemented in the case study told in Chapter 8.

Chapter 8 follows a two day event with Anglian Water entitled 'Creative Problem Solving'; it was undertaken after the development of the concept of critical creativity. From the very first contact, the principles of critical creativity were consciously adhered to and TSI's projected critique was followed. This example was grounded in strong philosophical foundations and, again, was 'successful' for those directly involved and for overseers; even so the iterative nature of systems-related activities means that insights have still been surfaced. These form part of the starting point in future creative practices and further enrich the pursuit of critical creativity.

### 3.4 Chapters 9 & 10

Chapter 9 is the place where an evaluation and reflection process of the aforementioned practices is presented. I continue the analytical theme of the two preceding chapters, but this time introduce Love's (1991) framework of internal evaluation and then go on to use metaphors as vehicles for exploration and assessment. Both approaches can reveal new insights into activities shared in Section III and enrich the concept of critical creativity. The former is particularly in keeping with the Participatory Action Research strategy which is adopted throughout this thesis. The latter, a method mentioned in Chapter 5, is
potentially more creative and, additionally, subtly complements the thesis; it is an example of critical creativity having been practised within the framework of a PhD process. Both bring value to the thesis through their adherence to the four key principles of critical creativity - reflection, participation, systemic and sociological awareness - as laid out in Chapter 6.

Chapter 10 provides a summary. It brings together the strands of the thesis and reconsiders its aims. It makes clear that I have gone beyond the systems approaches to creativity of Rickards (1985), Csikszentmihalyi (1988), Gruber (1981) and Gruber and Davis (1988) and stresses the contributions that I make to the theoretical and practical arenas in the study of creativity. The extraction, exploration and enrichment of a meta methodology from the systems world was evidently embedded within a dynamic cyclic learning process. Its subsequent effective implementation further shows the strength of a theory-practice partnership. The result is that I have developed an approach for the creative management of creative management which is founded on current systems philosophies; it is pertinent to practitioners and researchers operating today.

Having laid out the structure of the thesis, I can move on to Chapter 2 where I describe the research strategy which I employed.
CHAPTER 2

1.0 Introduction

Having explained the aims and the structure of the thesis in the first chapter, we now move on to look at the research method which was employed. The selection and implementation of methods is a complex issue. A complementarist approach, such as I adopted, recognises that there is no single 'right way' to proceed. A range of factors need to be taken into account, judgment applied and decisions made. It is therefore important to share the details of my approach so that the reasoning behind particular courses of action becomes clear.

This research project examines systems studies and creative studies; its approach reflects the nature of these two research areas. That is, the work was tackled both systemically (critically\(^1\) systemically, in fact) and creatively. In taking a systemic point of view, not only was the 'whole picture' continuously sought but I actively tried novel, but valued, means of seeking it. Extending the discussion a little further and speaking in systems terms I can say that, at one level, the relationship between theory and practice was foremost in my thoughts. A reductionist approach, with theory and practice compartmentalised from each other, was actively avoided. That is, the interconnectedness of one arena to the other was appreciated. At another level, the collecting of multiple partial views was always encouraged; many perspectives were taken into account. As the full nature of Critical Systems Thinking is surfaced, in later chapters, the complementary, participatory and emancipatory aspects will surface from the research method. Emphasising the creative intent, maintenance

\(^1\) In contrast to an 'isolationist' approach (as mentioned in Chapter One) complementarism attempts to preserve the theoretical and methodological diversity of research strategies, and encourages the researcher to manage it.

\(^2\) To operate 'critically' is to adopt a manner which embraces a process of reflection.
of an open mind and the application of a variety of creativity enhancing techniques were consciously included so as to enrich research activities.

The systemic and creative intents synthesised rather neatly. For, the dominant aim of a creative approach is to introduce diversity, while the aim of a systemic approach is to provide a means of dealing with diversity.

Indeed, it was useful and creative to practise critical creativity during the research process. While preferring not to emphasise personal affinity for particular mediums and ignoring any time constraints, but choosing to allow the purpose of each stage of the research process to dominate the choice of technique, it was creative to the extent that PhDs can invite creativity. But one is not dismissing a scientific framework of PhD research - this creative style was adopted within a rigorous research strategy.

It is the rigour of the research strategy which provides validation of and attains credibility for the eventual findings. So, there is some irony associated with writing a thesis concerned with creativity - the research method does not appear itself to encourage creativity, neither in approach nor in presentation. Inevitably, some of the heart of the topic is lost to the detriment of both the writer and the readers. The elements of excitement, exhilaration, spontaneity and fun are difficult to capture in a formal presentation. However, they are not forgotten; merely hibernating, and will awake in applications of the thesis.

Studying the research process is a discipline in its own right. Many authors have considered the research process and usefully modelled it. In clarifying my own thinking around the process, I developed the illustrative model shown in Figure 1. This forms the framework for the discussion herein. Before introducing the model, however, some of the background to the project will enable a richer picture to be drawn.
2.0 Background

During several years in industry I had experienced the power of utilising systems based problem solving methodologies in profit seeking organisations. Pursuing PhD research offered me the opportunity to contribute to the enrichment of systems practice. I was surprised to learn, from the results of a survey I conducted, that a large percentage of organisations were not even aware of the existence of systems based approaches; however, of that percentage, a majority were willing to consider changing their current problem solving methods. Another important finding was that systems thinking did not appear to have been made suitably accessible to organisational problem managers. At the time, I was already aware of Total Systems Intervention (TSI) as a problem solving framework which resonated with my complementarist position. So, with the intention of improving the accessibility of holistic approaches to non-systems specialists and also recognising TSI as a suitable vehicle to employ, I began looking at some of the associated pedagogical issues along with the practical implications of using TSI. However, this line of enquiry soon changed.

In a systematic review of the three phases of TSI - Creativity, Choice and Implementation - and examination of their philosophical foundations, it became apparent that applications of the Creativity phase did not necessarily reflect critical creativity. The practice of creativity within the framework of TSI was, for instance, not necessarily complementary, reflective or emancipatory. There was an absence of methodological guidelines; the nature of the creativity in question was not clear. (Ragsdell (1995(c)) relates my first thoughts on this matter). I was surprised to find that the 'something' which I had been looking for in that phase was, in fact, not there! The research task was beginning to crystallise: to develop the Creativity phase of TSI. Perhaps more interestingly, though, it was gradually occurring to me that TSI itself could guide the Creativity phase. I recognised that, not only was the framework a meta-
methodology for problem solving, but it could also be a meta-methodology for one of its phases. The recursive structure of TSI allowed it to ‘help itself’.

But, as is the character of research, in the light of new information and understanding there was yet another, but final, reformulation of the project. For as I followed the main debates in the creative studies arena, it became increasingly apparent that the field of creativity is as fragmented as the study of problem solving had been some twenty or so years ago. That is, until there were clear attempts at unification. It seemed reasonable to expect the two integrative fields of creativity and problem solving to be at a similar level of development. So, instead of setting my boundary of interest around the Creativity phase of Flood and Jackson’s (1991) TSI, I dramatically extended it to include the whole discipline of creativity.

To summarise the origins of my research then. My research topic initially arose out of a systems practitioner’s concern that systems-based problem solving approaches were not being fully ‘shared’ with non-systems specialists. The same practitioner then recognised the benefits of including a form of creativity in the problem solving processes which reflected similar philosophical foundations to those which underpin Critical Systems Thinking. On finding a framework which guided such creative practices, its theoretical underpinnings meant that it additionally proved to be a suitable framework to unify the discipline of creative studies. So, while I have retained my systems practitioner’s hat, there has been a metamorphosis into a practitioner who has recognised the benefits of exploring the foundations of her problem solving tools, so as to introduce a creative element which reflects similar roots.

Now to discuss the research method in more depth.  

3 Here I do not mean unification in the sense of simply an assimilation but the bringing together of studies of problem solving in a complementary way. A complementary approach recognises and respects the diversity inherent in the strands of the different studies.
3.0 Research Method

It could have been awesome for an individual unfamiliar with social theory to launch into a research project which was anticipated to be centred around people. Equally awesome could have been the mass of literature surrounding research method and recent discussion of its links with social theory and practice in the systems field. However, a concerted effort not to be sidetracked by mainstream debates over their integration, and preferring to adopt a pragmatist’s philosophy, proved to be effective. And, in keeping with the notion of research as an experiential learning exercise, the research method itself was altered in the light of new understandings in its theory and practice.

Morgan (1983) presents a collection of diverse papers directed towards social research. In his own introductory paper, Morgan interprets the research process as involving “...choice between modes of engagement entailing different relationships between theory and method, concept and object, and researcher and researched, rather than simply a choice about method alone.” (Morgan, 1983, p19-20). Following on from this, he derives a framework (Morgan, 1983, p21) which analyses the logics of different research strategies. Drawing on paradigms, metaphors and puzzle solving, links between the constitutive assumptions, epistemological stance and favoured methodology are surfaced. Now, while Morgan’s model was helpful in clarifying the research strategy, I have aimed for further clarification of the overall process by developing a model based on the ‘3S’s’

With reference to Figure 1, I put forward that the research process encompasses components of strategy, style and step; necessarily changing with the demands of the research process. Each part of the research process involves choices of these three components; examples of components have been shown

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4 S^3 sprang to mind, but then I recalled that this term was used as an acronym for ‘Social Systems Sciences’ at the University of Pennsylvania.
in the aforementioned figure. By **strategy** I imply the overarching framework for the development of the thesis - the master plan by which to initiate, reformulate, reflect on and clarify theory, to use the terms of Forcese and Richer, (1970). In recognising the creative tones of my research process, I am referring to just one of the **styles** in which some of the strategic functions were undertaken. When **steps** are explored, it is the use of skills and tools which will bring data and information to the research work, which are under scrutiny. It is within this chapter that my strategy, styles and steps are described.

4.0 Research Strategy

As shown in the next chapter, the process of problem solving has evolved over time. Similarities in the evolution of the research process can, quite naturally perhaps, be drawn. It is not, however, my intention to do that here. It is sufficient to say that no longer is scientific method the only respected approach and no longer is the expert role the only one researchers can adopt. Action research, with its various family members, has now come to the fore, and brings a range of roles for the researcher.

Given that action research is a wide ranging, and expanding, family, there are many associated issues ripe for debate. Exploring action research methods could be PhD study in its own right. The ‘emerging varieties of action research’ identified by Elden and Chisholm (1993) make such studies strikingly pertinent for active researchers. I could have followed Reason’s (1994) direction and examined the development of the notion of collaborative action research or Fals-Borda’s power and knowledge relationship in action research (Fals-Borda and Rahman, 1991; Fals-Borda, 1996). For this chapter I have chosen to look at the relevance-rigour issue, specifically focussing on the discussions between Argyris and Schon, and Whyte.
4.1 Action Research

Action Research (AR) is a research strategy which attempts to link theory and practice. It aims to combine the practical concerns of people in problem situations with the goals of social science. Albeit a relatively new term, AR is said to have been practised for a long time. Warmington (1980) tells of its history from as far back as the early twentieth century when Frederick Winslow Taylor was researching activities in the steel industry. Taylor's findings had a huge impact on "... management thought and upon the application of social science to organisations." (Warmington, 1980, p23), and could therefore have been classed as AR. We could then trace through to Mayo's (1933, 1949) Hawthorne studies during which he, too, could be said to have been practising such a strategy. But it is Lewin, in the 1940's, who is credited with being the first 'Action Researcher'. Lewin (1946, 1951) consciously applied social psychology to practical problems, and used the expression 'action research' in his writings. The aforementioned occurred in the United States; Britain was even later in using the term. It wasn't until the late 1960s that the Tavistock Institute referred to their work as 'action research'.

In the same way that earlier researchers have retrospectively practised action research, I did not deliberately plan to undertake my project in such a manner at the outset. I will admit to that, and also to the times I responded wholly intuitively to choices about my course of action rather than by making reference to its academic basis. Admitting as such does not detract from the quality of the research and its findings; it merely 'tells it how it was'. Only with hindsight do I label my chosen research strategy as one of action research; specifically participatory action research, as introduced more fully in 4.2. However, while participatory action research reflects my personal preference, I

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5 It is important to mention that, while suggesting that 'action research' was not fully recognised in Britain until the 1960s, there were key players such as Revans who were integrating theory and practice in their research. His approach has become known as 'action learning' (AL). Pedler (1991) provides a comprehensive edited collection of writings on AL.
will go on to support its choice by showing that it is a strategy which parallels both the current era of problem solving processes and the anticipated forms of creativity. In my research method therefore, I am practising the notions which I am subsequently exploring. Given my background, the recent realisation that my approach reflected characteristics of a form of social research which is now impacting quite significantly on the systems movement, (Wilby, 1996), was especially welcoming. From a paper in Wilby's (1996) collection I draw out specific examples of these characteristics (Ragsdell, 1996(b)).

There has been extensive discussion recently around the various forms of action research; in particular, within the context of emancipatory research. As will emerge, the possibility of emancipation is just one of the benefits of using this type of approach. So, next, more details of the applied dominant strategy are presented. While not dwelling on the specific parallels with features discussed in Chapter 3, I include them to indicate some of the potential benefits of using participatory action research.

4.2 Participatory Action Research, (PAR)

I have already stated that PAR is a member of the family of action research, which in turn has its roots in applied research. According to Whyte (1991, p7) PAR evolved out of intellectual development and action in the three streams of social research methodology, participation in decision making by low ranking people in organisations and sociotechnical thinking regarding organisational behaviour. Building from a couple of features of both applied and pure research, more of the nature of PAR can be revealed.

Applied research involves four stages - designing the project, gathering data, interpreting the findings and finally recommending actions to the client.

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*Systems Practice* 9:2 and Wilby (1996) show examples of contributions to this discussion invited by the Centre for Systems Studies, University of Hull.
During all these stages the researcher acts in the expert role. Pure research calls for even less interaction with clients; members of the client organisation are treated as passive subjects merely authorising the project and receiving the results. However, in PAR the relationship with clients is very different; some members "...participate actively with the professional researcher throughout the research process from the initial design to the final presentation of results and discussion of their action implications." (Whyte, Greenwood and Lazes, 1991, p20). The success of this aspect is founded on the Lewinian thought that "...causal inferences about the behavior of human beings are more likely to be valid and enactable when the human beings in question participate in building and testing them. Hence it (i.e., PAR) aims at creating an environment in which participants give and get valid information, make free and informed choices (including the choice to participate), and generate internal commitment to the results of the inquiry." (Argyris and Schön, 1991, p86).

I now come to some of the benefits I and the participants experienced through using PAR. As the rest of the thesis unfolds, it will be seen how many of the benefits of my research method are actually expectations of Critical Systems Thinking and critical creativity; as said before, the research strategy reinforces the principles of the subject of the research. Reflections on specific benefits are summarised towards the end of each forthcoming chapter.

4.2.1 Complementarity

Complementarity suggests that no particular strategy is superior, but rather more or less appropriate for the situation in hand. Although we often try to relate to one particular research strategy, it is to the detriment of the quality of research if their eclectic nature is forgotten. Whyte et al. justified their appeal for complementarity in research approach, expressing it so eloquently during their argument for the scientific and practical value of PAR, "No scientific logic

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7 Eclecticism refers to the non-exclusivity of sources that research strategies may show.
demands unilateral commitment to one kind of social research model or method. Increasing reliance on such a narrow theoretical and methodological base deprives the field of the scientific vitality of other research approaches that can be at once scientifically challenging and practically useful. The complexity of the world around us demands the deployment of a variety of techniques and strong intellectual and methodological discipline, not a commitment to the hegemony of a single research modality.” (Whyte et al, 1991, p19)

Morgan was also aware of the benefits of complementarity when he wrote, “A knowledge of technique needs to be complemented by an appreciation of the nature of research as a distinctively human process through which researchers make knowledge. Such appreciation stands in contrast to the more common view of research as a neutral technical process through which researchers simply reveal or discover knowledge.” (Morgan, 1983, p7)

Argyris and Schön also mention complementarity in their comparison of PAR with action science. They see the research process as a choice that “... hinges on a dilemma of rigor or relevance” (Argyris and Schön, 1991, p85), and go on to say that, from the point of view of the action researcher, “... the challenge is to define and meet standards of appropriate rigor without sacrificing relevance. And, for this purpose, action research needs three things: a way of representing research results that enhances their usability, a complementary way of construing causality, and an appropriate methodology of causal inference.”

So, an imperialist approach is deliberately exchanged for one which is not so 'blinkered'; one which recognises the complexity of research and acknowledges that various approaches can indeed contribute to the research process. Action research appears to be coming to terms with this issue.

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3 An imperialist approach is similar to an isolationist approach except there is some recognition of ideas from other theories.
4.2.2 Interdisciplinarity

In reflecting on their case studies, Whyte et al. (1991) show that PAR can have a far greater impact in stimulating and guiding organisational change than the conventional consultant-expert role practised in most other research strategies. This was true not only in the short term, but also in the longer term. While they share several attributes of PAR which can contribute to such an increased impact, one which I include here is that of overcoming the single-discipline limitation experienced in some research (Whyte et al., p40). In the same way that systems thinking extends over many boundaries, and thus gains recognition for its interdisciplinary nature, PAR enriches its process by presenting the opportunity to bring in expertise from all over, and outside of, the client organisation. So, the accompanying consultant’s role becomes more a facilitative role than that of the expert.

4.2.3 Continuous Learning Philosophy

The iterative nature and experiential learning features of systems studies are also seen in PAR. Since the rigour of PAR is upheld by continuous checking with the participants (all of whom have first hand experience and indepth knowledge) before and during the compilation of any reports, a continuous learning philosophy underpins activities. Whyte et al. (1991) and Argyris and Schön (1991) all make reference to it, often as the “continuous mutual learning strategy”. Again, the research benefits from the enrichment gained from the openness to ideas and the positive attitude to ‘going round the loop again’.

4.2.4 Empowerment

While also recognising the learning generated by the process of PAR, Elden and Levin (1991) are sensitive to the lack of “value-neutral” individual scientists. This is an issue in its own right. For now it is left in the background, as I use Elden and Levin’s model merely as a vehicle to move into consideration of empowerment.
Setting their model of PAR in the context of six attributes which researchers often exhibit, including a clear commitment to democratization, Elden and Levin (1991, p131) suggest that PAR can empower participants in three ways. Firstly, they say, it is empowering in that participants learn how to learn. Secondly, participants experience new insights, and finally, PAR often creates new possibilities for action. The emancipatory intent of Critical Systems Thinking is not fully sought by PAR. However, it appears to go some way towards it. Maybe further evolution of action research will encompass it.

4.2.5 Creativity in PAR

Here I bring attention to another of the attributes of PAR which Whyte has identified. In his extension of Argyris and Schön’s discussion, Whyte (1991, p7) puts forward that, since PAR focuses on social structures and processes, PAR is likely to depend on “creative surprises”. Certainly more so than action science - another member of the action research family. As future chapters move into the introduction of creativity enhancing techniques, similarities between the atmosphere of PAR and an environment conducive to creativity will become apparent. Whyte et al (1991) talk of the creation of “organizational and intellectual space” while others use similar metaphors to describe the ability of the client organisation to change its ground rules in order to run with creative solutions. So another benefit of applying PAR, in my view, is the greater potential of inducing creativity.

4.2.6 Summary

To summarise discussion of my chosen research strategy then: Participatory Action Research is a useful strategy for stimulating organisational change in which there is a close relationship between the researcher(s) and some organisational members. It recognises that the researcher is not a ‘value-neutral’ individual; the researcher is not someone who simply reports findings to the decision makers. In addition, the promotion of interdisciplinary activities (as a
result of progression from Taylor to Trist, from scientific management to sociotechnical systems) discourages an imperialist standpoint. All in all, activities undertaken within the framework of PAR respect a systemic and creative stance.

5.0 Research Style

Few, if any, research models mention the style in which work is undertaken. The role of the consultant, however, is becoming very topical. In the field of OR, and more recently in systems, writers such as Taket and White, (1995(a), (b)) are contemplating the alternative roles. But, I do not equate style with role. If one looks again at my model, in particular at the styles that I have included, it is easily seen that one could adopt any of the styles while operating in virtually any role. Considering style rather than role allows me to encompass the latter without using confusing terms. There are perhaps fewer problems with semantics associated with styles than there would be with suggested roles. Styles should therefore be more straightforward to use; there would be less confusion in behaving ‘creatively’ than behaving as an ‘expert’, for instance.

My model does not take for granted, or assume, any particular style. There are obvious appropriate and inappropriate combinations of strategy and style: for example, practising action research in an authoritarian style would not be appropriate in my view. Again, the research process relies on the researcher making choices based on a holistic view of the context in which they are operating. In this particular instance, I chose to undertake the research strategy of PAR in a style which was dialogical and, at times, also creative. I now go on to explore these two styles further.

5.1 Dialogical Style

From the participatory nature of my selected research strategy, there is already a significant implicit level of dialogue. Actually specifying a dialogical
style should not be too surprising. This style and strategy seem to complement one another quite well. For the main part, then, the research centred around discussion; discussion of proposals, discussion for feedback and so on. A wide range of examples where dialogue was paramount in the progress of the research process will be apparent throughout the thesis. They arise more forcibly in Section III where activities with two client organisations are described.

Just to give a brief example now: fruitful contact with the Council for Voluntary Service (CVS) was predominantly in the form of discussion. Since their organisational culture did not place priority on paperwork, there was rarely any progress in our relationship which emerged from a written correspondence. Even when following agreed stages from a methodology, the CVS members tended to mould the recommended stage into a discussion, choosing to disregard the intended form. A dialogical style certainly maintained the momentum of my research project with CVS.

5.2 Creative Style

Adopting a creative style for PAR is perhaps a little harder to relate. Again, though, the overarching strategy seems to suggest that adhering rigidly to any predetermined framework was not expected. Just glancing at the beneficial features of PAR in the previous section, sends an invitation to creativity. There is positive encouragement to openmindedness, new learning and novel insights. By practising critical creativity, any options were not too 'off the wall'; the context of research was always foremost when planning the research steps.

To speak more specifically of instances where creative approaches were explicitly practised: Soft Systems Methodology embraced the whole

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9 All of these approaches will be explained in subsequent chapters.
Chapter Two

process; brainstorming stimulated the review stage; Idealized Design helped in the development of the Anglian Water Event; metaphors were used in reflective processes; Six Thinking Hats structured the concluding section. Perhaps the viva will be a role play exercise? It would have been interesting to write each chapter in the form of outputs from such creativity exercises but the critical nature of the creative processes would have been neglected in doing so. PhD research probably would not have valued such presentation.

6.0 Research Steps

The final generic components of the research process are now introduced - the research steps. As stated earlier, by this I mean the skills and tools with which information and data was brought to the research project. I think of these steps under seven headings. While their discussion might suggest a sequential ordering of events, that is a little misleading. There was sometimes a blurring of steps; the steps were not always as discrete as implied here. However, for clarity of presentation, they are treated as such. So, I move on to an introduction of the steps.

6.1 Literature review

As with most research projects, it is important to uncover the past and present activities in the chosen field of study. Not only does it indicate to the researcher any trends of the movement, but it also serves to highlight areas which are underdeveloped and ripe for exposure. So, a literature review was one of the first steps in my process. Understandably, it is a step which is necessarily ongoing until submission of the thesis, for contributions from other research institutes and individuals do not stop nor can the review of the older literature ever be complete.

6.2 Typology of literature

The mass of collected literature from the field of creativity and problem
solving was overwhelming. A means of handling such an amount was necessary. There were many sensible ways to organise the information - the taxonomy I chose reflected the level of detail on which the material focussed. Alternatives are mentioned in Chapter 4. This taxonomy, I suspected, would not only prove useful at this early stage in the research process but would also provide guidance during the praxiology.

6.3 Developmental work of methodology

Once I had identified that my contribution to the fields of creative studies and problem solving processes was to be their unification, through a form of creativity I term ‘critical creativity’, the next step was to develop a methodology for just that. I was fortunate that, from previous research responsibilities, I had already encountered a framework known as Total Systems Intervention. TSI is founded on Critical Systems Thinking. With some modifications, TSI seemed a good base from which to work; especially since the philosophical foundations of critical creativity are similar to those of Critical Systems Thinking.

6.4 Fieldwork

Having taken the decision to apply TSI as a methodology which would guide my pursuit of critical creativity, using it in a live context was the next logical step. I was pleased to receive a number of invitations from organisations which were willing to participate in my project. Two were selected, one from the voluntary sector and the other from the profit making sector. The long interval between the two sets of fieldwork means that the development of critical creativity was at two different stages when the practice was carried out. Section III is where this will become more obvious.

6.5 Praxiology

While the relationship between theory and practice was never forgotten, the praxiology step brought it to the fore. The conscious integration of ideas
from the two arenas enabled further development of the methodology. A feedback loop was in place by which to enrich the whole thesis.

6.6 Evaluation

Love's (1991) process of internal evaluation was chosen for this step since it reflects the character of PAR so well. Chapter 9 discusses the process in more detail and emphasises the compatibility between the research strategy and this intrinsic step. Here it is suffice to say that internal evaluation is a more systemic and participative activity than the majority of evaluations undertaken by experts who are external to the organisation. As a result there are many more additional beneficial outcomes of the process.

6.7 Reflections

Although reflection is an integral component of the meta methodology which I was proposing to enrich, I also recognised the benefits of it being an acknowledged research step. It was an opportunity to explicitly generate insights as the learning cycle was travelled again. Metaphorical exploration of the case studies presented in Section III complements their evaluation.

7.0 Summary

I have presented a discussion of the process of research which promoted the development of this thesis. In reality, the process was not as straightforward as might appear here. However, by talking in terms of strategy, style and steps, there is clarity of expression. Although some may think it 'tidier' to leave discussion of the research methodology here the nature of PAR determines that the researcher reconsiders it as the study proceeds. For that reason, further discussion of PAR is interwoven throughout the rest of the thesis presentation. This introduction now closes and the thesis moves on to a literature survey of Creativity, Problem Solving and Taxonomy of Purpose related to the development of Critical Creativity.
SECTION I

Rationalists, wearing square hats
Think in square rooms
Looking at the floor
Looking at the ceiling
They confine themselves
To right angled triangles.
If they tried rhomboids
Cones, waving lines, ellipses -
As, for example, the ellipse of the half moon -
Rationalists would wear sombreros.

Wallace Stevens 1879-1955

[Price Waterhouse Management Consultants, Sunday Times, 22.10.95]
CHAPTER 3

1.0 Introduction

This chapter introduces the concept of critical creativity. In doing so it moves our understanding of the elements of creativity and problem solving per se, into a future era. Critical creativity provides a useful vehicle by which to develop a process of organisational creative problem solving.

Given the longevity of creativity there is understandably a wealth of associated literature. I selectively draw from such material to provide a comprehensive background from which the concept of creativity can eventually be sited in the context of organisational problem solving. At this introductory stage it is pertinent to present a historical review; understandably other writers in the field have also taken this orthodox approach (Isaksen, 1987; Parnes 1992). However, Chapter 4 extends the discussion on creativity and is structured around a more novel approach, working through some of the main arguments genealogically.

This chapter concurrently explores findings from an investigation into problem solving. Such an investigation shows how the problem solving process has evolved over time. Useful outlines are already provided by Ackoff and Vergara (1981), Mayer (1983) and Rosenhead (1993); similarities with their contributions is almost inevitable since one is not rewriting history. However, while the main storyline cannot be changed, both the level and focus of interest have been adjusted.

Particularly since the literature is chronologically explored and because the two areas do genuinely integrate in more recent times, it was difficult to resist the temptation to discuss creativity and problem solving in parallel.
However, in order to maintain respect for the individual disciplines, it is left until the final summary to show the full extent of their synthesis.

2.0 Creativity

2.1 Introduction

Creativity is intangible. It cannot easily be picked up, packaged and passed on to the next person, neither conceptually nor physically. Even so, we behave as if we know when creativity is with us. We claim to sense its presence, experiencing the joys of a creative process and enjoying the satisfaction of a creative product. Equally, we claim to recognise the absence of creativity, suffering frustration from a lack of new insights and longing for the ‘Aha! experience’.

So, what do we understand by ‘creativity’? It is a term most of us are familiar with, yet tend to find it so difficult to define. Indeed, formulating a definition which is appropriate for all circumstances would seem impossible; perhaps a project in its own right, and an endless one. However, some authors assign little value to a definition of creativity. Openly avoiding the task of producing a potentially restrictive written specification, they choose to rely on readers’ intuition, previous understanding and inferred interpretations. Storr (1972), for example, relies on Barron’s definition of “the ability to bring something new into existence” (Barron, 1965). In a similar vein, Harth (1993) extends Kosslyn’s (1983) definition for thinking to define creativity as “the ability to contemplate something that has never existed before”. Others, myself amongst them, regard the development of a definition as laying common foundations on which to build a comprehensive study even if, as is likely, such a definition could become in need of modification in light of new understandings. (Boden, 1990; Cohen, 1994 and Stein, 1974, for instance)
Section I
Chapter Three

There are those who feel uneasy with the intangible nature of creativity; there have been efforts to 'put numbers to it' and, by doing so, bring the notion into a physical existence. Measuring; rating; assessing; creative potential; creative individuals; creative ability - every purposeful permutation has been studied and reported. In addition to their own contributions, Biondi and Parnes (1976) text includes the work of Torrance, Mednick, Flanagan, Guilford, Holland and Baird, all of whom are key players in this area of creativity. But, for certain parties, 'measuring' creativity could be considered even more controversial than defining it. For, where does one normally start in empirical studies? With a definition? That takes us back to the beginning!

I attempt to break out of this spiral of thought by drawing together ideas from various acknowledged forums. So, I proceed with an exploration of accepted expressions for creativity from diverse areas of activity, introducing general discourse from various viewpoints and from a variety of settings - education, industry and art, for example. Even though 'creativity', in various guises, has been a topic of discussion for a long time it is difficult to find a precise, succinct definition which is appropriate for most circumstances. Terms such as 'innovation', 'imagination' and 'ingenuity' spring to mind, yet one is intuitively aware of their inadequacy. One is also aware of the enormity of task assigned to any collocation of these and other terms. Many authoritative writers have, nevertheless, contributed informed expressions. Acknowledging the effects of the 1950 Presidential speech of Guilford as something of a starting point, but not forgetting the earlier efforts, a short list of such expressions are chronologically ordered. Changes in the image of creativity become apparent, serving to remind us of Parnes' (1992) characterised decades, until a contemporary form of creativity emerges. As will be shown, much of the mystery which once shrouded creativity has been lifted. Introduction of operational definitions has doubtlessly played a part in removing some of the esotericism and enigma which prevailed in the early part of this century and, as
In a similar fashion to Parnes’ (1992) characteristic decades I have found it beneficial to organise discussion of the changing image of creativity into distinct eras. While the descriptive prefix for each era cannot hope to be all encompassing, and in no way means to trivialise activities, it does give a flavour of the state of the studies during that time. The continuing move away from the genius view of creativity to a view which respects the acceptance that creative processes can be undertaken by all individuals, will become apparent. It will also be shown how the study of creativity has progressed from a frustratingly fragmented area of interest to a discipline which has eventually come to terms with its multifaceted nature. On appreciating its eclectic underpinnings, the whole creative movement gained momentum and surged forward with a clearer understanding. In addition, it will be shown how the increase in complexity of organisational life has placed the spotlight on creative studies, and is enabling the movement to promote itself in both mainstream applications and mainstream research projects.

2.2 The Kernel of Creativity - Pre 1930s

While there is a tendency for authors to start relating the development of creativity from as recently as 1950, the efforts prior to that time were probably the kernel from which any growth transpired and should not be overlooked. As far back as 1900 one can trace a plea for interest to be shown in creativity from Ribot. While it was apparent that there was no common coherent theme or research design in the first part of the century, the fragmented mode of operation allowed parties to contribute ideas from their own particular field of interest. There was a rich resource amongst the ripples of interest in the topic.

Indeed, one could go as far back as Picasso’s times when he purportedly declared that “Every act of creation is first of all an act of
destruction" (cited in von Oech, 1983, p47). By this he did not mean to imply a physical act of destruction (although it could conceivably be) but rather a challenging of the rules which a prevailing culture pressurises community members to follow. Creativity does not follow the norm.

A little later, amidst the era of Scientific Management and from her pioneering work as a mediator in labour disputes, Follett (1924) viewed the creative process as an integrative activity. While Freud (1970) viewed conflict as a source of creativity, Follett was slightly more restrained and considered ‘difference’ to be a sufficient catalyst. As Anderson (1959(b), p130) clearly retold on behalf of Follett, “the free interacting of minds in disagreement was creative”. And so, the seeds were being sown from which to reap in future eras.

2.3 Cardinal Creativity - 1940s

As one will readily deduce from the majority of sources, psychologists have played an active role in creativity studies; more explicitly in recent times it ought to be said. As described by MacKinnon (1975), until the early twentieth century the discipline of psychology was trying to establish itself as “an empirical and experimental science”. The nature of the human and his/her personality was placed outside of this scientific domain; the study of creativity was not in focus. It was not until the 1930s, notably after Freud’s studies brought the person into the frame of reference, that creativity was recognised as a research field of importance to psychologists.

But there were still those who clung to the belief that creative ideas came from ‘out of the blue’. In 1949, Hutchinson was maintaining the mysterious view of creativity and presenting stories involving individuals who would, quite unexpectedly, experience a new insight which gave them inspiration in their work. Albeit each individual was totally immersed in their field of activity anyway.
There was no obvious unification until after Guilford’s speech; creative studies of the 1950s were launched with a range of starting points from the romantic position to the psychologist’s view. However, each starting point was fundamental to the development of creativity - hence the title ‘cardinal creativity’.

2.4 Chaotic Creativity - 1950s

The 1950s saw an increase in the flurries of activity; creativity was becoming a more manageable prospect for research, now that the individual was involved. I refer to it as a chaotic period, but with positive connotations, because I wish to reflect the seemingly frenzied pursuit of knowledge in this field, the dramatic increase in publications and the stimulating atmosphere that these factors presumably provoked. An expectant air probably prevailed. Parnes, similarly, conveys an era of uncertainty - the ‘hope and hunch stage’, as he named it. From this period, Anderson (1959(a), px-xi), particularly sensitive to the transition in the regard for creativity, summarised the change quite well and also exuded a feeling that there was ‘more to come’.

Although there is much potential from allowing chaotic behaviour to dominate, prominent players realised the advantages of centralising efforts. Creativity research centres were being founded and symposia organised in attempts to share resources and maximise research inputs. Calvin Taylor’s biannual series of international creativity research conferences, 1955 onwards, proffered a valuable forum and brought many eminent subscribers together to the University of Utah. So, the chaos was being managed and a discipline in its own right was emerging.

2.5 Complex Creativity - 1960s

By the 1960s there was great momentum in the creativity movement. Psychologists were still frantically writing up their earlier findings but
simultaneously grappling with their realisation of the multifaceted nature of creativity. Rhodes (1961) tried to alleviate some of the confusion caused by the absence of one clear meaning of the word ‘creativity’. In spite of collecting around sixty different definitions, he had to admit that a single definition was not a feasible aim. However, he had recognised that each definition centred around four strands (Rhodes, 1961, p307). These four strands include information concerning the 4Ps: person, process, product and press, the last emphasising the relationship between the person and the environment.

Koestler’s text entitled ‘The Act of Creation’, originally written in the 1960s but reprinted several times since and still considered to be a ‘classic’, also relates a synthesis of ideas when he speaks of three forms of creativity - "... artistic originality, scientific discovery and comic inspiration ..", Koestler (1978, 1981). Speaking from a psychologist’s point of view, and not content with the romantic view previously upheld, he put forward an explanation that all creativity falls into one, or a combination, of these three categories.

So, the 1960s openly recognised the inability to produce a clear cut definition of creativity; transposing the notes of confusion and uncertainty to a more positive tune. There was acceptance of, although not resignation to, the complexity of creativity.

2.6 Commercial Creativity - 1970s

Feeling rather more comfortable with the complex nature of creativity, writers began to produce more comprehensive definitions. With the task of formulating a universal definition laid to rest, the focus was transferred to the application of research findings. It was during this era that organisations, other than academic institutions, became more aware of the role that creativity could play for them and the benefits that it could bring. In particular, the work of Guilford was welcomed by industrial leaders.
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With few exceptions, the majority of psychologists researching in the 1950s and 1960s had not been interested in creative problem solving; hence, most of their work went unnoticed by organisation leaders. Guilford, however, hypothesised that creative individuals could be distinguished from non-creative ones; this was a commercially desirable ability, as one might appreciate. This research project, along with others which emphasised the encouragement of creativity, found themselves, thus, thrust into another arena. So, a practical emphasis was given to creativity; altogether giving rise to a better balance in the discipline.

2.7 Criteria of Creativity - 1980s

Experience in practical applications predictably enriched the theoretical basis of subsequent studies. Hence, as we might expect, with the 1980s came more clarity and, with it, an urge to 'concertise' creativity; its measurement was becoming more attractive for some. So, from another perspective, Hausman (1981) was able to put forward four criteria of creativity:

“(1) created outcomes have intelligible structures that are irreducible; (2) the structures of created outcomes are unpredictable; (3) the structures of created outcomes are inherently and usually instrumentally valuable; (4) and the acts that lead to created outcomes include an element of spontaneity so that although they are directed and are controlled, they are discontinuous.” (Hausman, 1981, p89)

Jarvie (1981, p126) took a slightly different view, but is still seen to be moving away from the associated mystic, when he stresses that “... being rational and self-critical .... is the key to anything deserving the label creativity”. At around the same time Vergara-Cabrera (1981) began her work in measuring creativity levels induced by a variety of problem solving approaches, and presented an expression for creativity, thus:
“Therefore, we define creativity in problem solving and planning as the ability of a subject in a choice situation to modify self-imposed constraints so as to enable him to select courses of action or produce outcomes that he would not otherwise select or produce, and are more efficient for or valuable to him than any he would otherwise have chosen.” Vergara-Cabrera 1981, p20 (original underlining)

A little later, Metcalfe (1983) discussed criteria that Besemer and Treffinger had incorporated into a model to assess creative products - novelty, resolution, elaboration and synthesis - as means to a definition. But, problems can arise when research activity results in so many new, but valid, definitions and in large quantities of data. Early in this decade there were calls for rigour in the correlation of results. In fact, Metcalfe (1983, p60), at the end of his own report, wrote of the need to “… develop a coherent account of what constitutes creativity …” as one of the challenges for this decade.

But not all who were actively participating in the creativity forum were focussing their attention on the detail of measurement. There remained those who were prepared to take an overview of the works in creativity and ‘measure’ the amount of interest. For, while it seems there has always been a certain level of active curiosity in this field of study, there has been noticeable increased momentum in activities at times. There have been times when it has been ‘trendy’ to recognise and stimulate creativity. Briskman (1981, p129), told of the popularisation of creativity with a certain cynicism. Yet he also reinforced high esteem for the concept.

Furthering this overview position, more recently writers such as Weisberg have tried to establish a path for the study of creativity somewhere between the genius view - “at its core is the belief that creative achievements come about through great leaps of imagination which occur because creative
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individuals are capable of extraordinary thought processes” (Weisberg, 1986, p3) - and the behaviourist view, which ignores the study of creativity on the basis that “there is no creativity in the sense of some specific process involved in producing something truly new. Either the product is really something old, or a new product is produced by accident.” (Weisberg, 1986, p3). A balance between a ‘mysterious’ form of creativity and its overt trivialisation is maintained by Weisberg (1986) in his six “myths” of creativity. He demonstrates the fragility of the genius view when subject to critical analysis, and concludes his text with an introduction to an “incremental point of view” developed from an analysis of simple problem solving. While realising that his work is but an introduction, he allows himself an expression of optimism that a theory of creativity is ‘on the horizon’.  

2.8 Contemporary Creativity - 1990s

We arrive at the present decade where application remains in the mainstream - texts such as Lumsdaine and Lumsdaine, (1995); Runco, (1994); Sternberg, (1994); indicate this to be so - yet different definitions are still being presented. Boden, for instance, built on Koestler’s 1960s theme but introduced computational psychology in her endeavour to “identify some of the ‘invisible links’ underlying intuition and to specify how they can be tempered and forged” (Boden, 1990). Even though she continued to use the mind as the source of creativity, Boden found it necessary to revise Koestler’s definition of creativity and avoid the “paradoxical ‘impossibility’ of genuine creation”, yet distinguish “mere newness from genuine novelty”. Classifying creativity into P-sychological and H-istorical types, the fundamental principle of Boden’s work is that a creative idea is one which could not have arisen from the generative rules which we have in mind; with respect to the normal thought processes, creative thinking is therefore impossible.

1 In fact, he goes on to develop this theory in Weisberg (1993)

2 A valuable idea is P-creative if the person in whose mind it arises could not have had it before; an idea is H-creative if it is P-creative and no one else in all human history has ever had it before.

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Variations on the theme continue to appear. For instance, McAleer (1991, p12) starts his paper with the dynamic expression, “Creativity is a passionate, exciting, and challenging effort to make just the right connection amid the buffeting chaos of everyday reality”. Lamb (1991) tells of three schools of thought and, like Weisberg (1986), refers to them as “myths of creativity”. He mentions the heroic theory of creativity, emphasising the ‘creative personality’ and dismissing the “collective and evolutionary development of scientific knowledge”, and its close link with the romantic tradition and the philosophical tradition of Plato. Both of these traditions deny that anything informative can be said about creativity. The former denies the rational analysis and simulation of the process of generating new ideas while the latter holds that there is nothing new under the sun. So is there really such a thing as creativity after all? In current writings, Cohen (1994, p255) chooses the term ‘magic’ in preference to ‘creativity’ when relating specifically to corporations and organisations, because she feels that creativity is personalised.

So, we have taken a look at some of the eras in creativity over the last ninety years or so. We are now in the present day where the value of creativity is still recognised. As this thesis goes on to stress, the increased complexity of our everyday lives has reminded us of the need for creativity to be an integral part of our problem solving processes. No doubt, this is a factor which has been a major influence in sustaining the momentum of research activities throughout this decade, and provided a guiding hand for the direction of studies.

A similar review of the process of problem solving will now be presented.
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3.0 Problem Solving

3.1 Introduction

Life is full of problems; it always has been and it probably always will be. There has not been a time when we have not had 'problems' to face. We do not know a life without them. This is true however we understand and interpret the term; whether we translate it as 'situations to improve', 'issues to tackle', 'difficulties to overcome', or even 'complexity to manage'. It is also true for whatever we consider the range of detrimental effects to be that characterises problems - global, national, organisational, personal. There might be aspects of our life which are merely irritating, which we can cope with ourselves, equally there may be others which have far reaching implications. Perhaps only the whole nation working together will be able to make an impact on those. All in all, we are familiar with 'problems' - or we think we are!

Perhaps we might benefit from thinking a little more clearly about what we really do mean by a 'problem'. Would 'problems' of a bygone time be considered to be 'problems' today? Perhaps problems are 'not what they used to be'? As this review unfolds it will become apparent how the notion of 'problem' has changed; and how, as one would expect, there have been corresponding modifications in our approaches for dealing with them. I put forward that those problem situations which were experienced, even as recently as a few decades ago, were not thought of in the same way that similar problem situations of today would be. But that is a sweeping statement: first, to more specifics.

In order to remain effective in dealing with problems of the day, it was crucial that the process of problem solving was developed. It has been necessary for the process to take into account the changes in its operating context; it has become essential for problem managers to acknowledge the increasing complexity of everyday life. So, while we can take for granted that
the purpose of problem solving has not changed - to bring about improvement, as judged to be so at a local level - the manner in which it is undertaken has. This has given rise to a variety of frameworks which can guide the process. It will be shown how creativity has gradually become an integral part of such frameworks and of the process in general; creativity is becoming both a valued and welcomed integral part of problem solving.

In a similar style to the one adopted for creativity, eras of problem solving have been identified. That is, periods of time I have selected during which the problem solving process exhibited distinct features. Of course, the time periods I have chosen cannot be declared to be precise; an evolutionary process is a continuum rather than a stepped configuration. They have merely been selected so as to illustrate the trends which have emerged from the source material.

In the same way that Guilford provided a significant turning point in the study of creativity, it could be said that the Second World War provided one for problem solving activities. Successful military operations, based on mathematical and logistical themes, emphasised the potential of ‘hard’ approaches. However, dissatisfaction with the performance of similar approaches in other types of organisations created a demand for ‘something different’. It is interesting to note that the events which were pivotal in creative studies and in problem solving, along with a rebirth of interest in cognitive psychology after Nazism had put an end to much of the work of Gestalt psychologists, occurred within a short time interval of each other. Yet it has taken nearly forty years for the two strands of thinking to become intertwined in mainstream applications and for there to be explicit collaboration, encompassed in ‘creative problem solving’.

Together, discussion of these eras weaves a path through problem solving...
solving. It is a path which begins in an era where problems were as given, mathematical logic was paramount in finding the solution and expert knowledge was not questioned. Travelling through an era where systems of problems are explored, soft complexity is recognised and participation is encouraged, the path eventually reaches an era where pluralism is sought and emphasis on facilitation and empowerment is appreciated alongside expert knowledge. But the path does not stop there. It continues; continuing into an era where there is concern with moral and ethical issues, issues of power and emancipation, and complementarism. That is the current era.

We are living in an era where creativity is starting to be freed. Explicit reference is being made to creativity in some problem solving approaches and there are genuine invitations for its inclusion in practical applications. But this is, by no means, the end of the path. It will be during the next era that appropriate methodological guidelines for its effective inclusion, will be provided. The inclusion of creativity into practical problem solving approaches so that it is an integral component requires a form of creativity which reflects the philosophical foundations of the overarching approach. As we shall see, critical creativity is the form to be included. But, we start with the first era.

3.2 Prosaic Problem Solving - Pre 20th Century

An era lasting more than twenty four centuries seems extraordinary. But, if we use the same starting point as Mayer (1983), in his account of historical perspectives of thinking\(^3\), then we return to 400 BC. A journey back that far takes us to Aristotle’s time; a time when the dominant approach to problem solving was based on ‘trial and error’. Founded on the belief that mental activities can be explained in terms of two fundamental components, Aristotle’s doctrine of ‘association’ by trial and error has reigned for many centuries.

\(^3\) Mayer uses the terms ‘thinking’, ‘problem solving’ and ‘cognition’ interchangeably.
His theory was built around the basic components of ideas or elements, and links or associations between the ideas. Putting forward that movement from one idea to the next was via a chain of associations, Aristotle asserted that such a movement was impossible without the use of images. Even though there were three roots of derivation for the associations - contiguity, similarity and contrast - the process was repetitive and dull. Neglectful of any learning from results, lacking in any beauty, the process was akin to reciting prose: hence, 'prosaic problem solving'.

3.2.1 British Associationists

The theme of association, as a means of explaining our thought processes, came to be of significant interest to leading British philosophers in the 17th and 18th centuries. Associationists in Britain, led by Hobbes and Locke, ‘reformulated’ the concepts and principles. (Reformulation is probably a little strong, as similarities with Aristotle’s work cannot be denied.) The British contingency proposed four characteristics for their theory - atomism, mechanization, empiricism and imagery - and, if we use Mayer’s (1983, p11) summary of these characteristics, the flavour of the original doctrine is evident.

Atomism: the unit of thinking is the association between two specific ideas.

Mechanization: the process of moving from one idea to another is automatic and based solely on the strength of associations.

Empiricism: all ideas and associations come from sensory experience; the mind begins as a blank state.

Imagery: if mechanization is automatic, then thinking must involve imagery.
So, the first era comes to a close; a long era but with little evolution in the investigations surrounding the manner in which problems were approached.

3.3 Polemic Problem Solving - Early Twentieth Century

I have referred to this second era as polemic because, as we shall see, experimental activities undertaken at the beginning of the twentieth century started to cast doubts over the foundations of associationist philosophy. Clear indications of rebellion and controversy against this long established theory were conveyed. There were doubts as to whether problems were simply solved by thinking in a chain of ideas. Even without an alternative theory, an ‘anti’ movement emerged which took issue with each facet of thinking - anti-atomism, anti-mechanization, anti-empiricism, and anti-imagery.

3.3.1 The Wurzburg Group

It was the activities of the ‘Wurzburg Group’ - a group of psychologists working in the German city of Wurzburg - which stimulated questions concerning the foundations of the associationist philosophy. These psychologists showed that it was possible to practically study human thinking; in doing so, it created the opportunity to ‘test’ the theory of association. The provocative nature of this work no doubt brought unease and discomfort to an established community.

This fresh approach brought the process of thinking and problem solving into the spotlight. In spite of their inability to put forward an alternative theory of their own, and amidst criticism that their attempts to experimentally study human cognitive processes relied on a method based more on subjective experience than on observable data, the Wurzburg members opened up new avenues of exploration. They promoted a significant change in the mode of inquiry into thinking; a change in course on which Selz was to build.
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3.3.2 Selz

It was in the second decade of this century that Selz (1913) proposed the first non-associationist theory of thinking: a theory which was independent of both imagery and associationism. With his unit of thought as a structural complex of relations among thoughts, rather than the string of particular responses based on the three types of association, Selz thought of the process of thinking as filling in or completing a gap in the structural complex. For him, thinking and problem solving were founded on organised complexes.

Consideration of thinking as involving organised ‘wholes’ was indeed a radical step; and so was Selz’s confirmation that thinking can occur independently of images. Inevitably, such drastic changes in hypothesis were accompanied by their critics. They emphasised his bias towards a purely theoretical approach, with its related disadvantages, by drawing attention to the fact that Selz, in a similar fashion to the Wurzburg Group, allowed subjects to write their own reports of the practical research experiments. Critics claimed that the objective element of his empirical research was lost. Perhaps such a quantum leap in theory was ‘too much, too soon’; it could be said that current theories, such as information processing, are somewhat of a compromise in this clash between associationist theory and the work of Selz, but that is moving too far ahead in time for now.

3.3.3 The Gestalt Movement

Following on from Selz’s work, the Gestalt movement concerned itself with a process of problem solving which would result in new structural understanding. To use Mayer’s (1983, p35) words, this party was interested in “... the ability to comprehend how all the parts of the problem fit together to satisfy the requirements of a goal. This involves reorganizing the elements of the problem situation in a new way so that they solve the problem.” So, although the emphasis was on organization and structure, one can detect an
The Gestalt approach distinguished between two types of thinking - productive and reproductive. The former refers to the case where a new solution to a problem comes forth because a new organisation has been produced; the latter to a process where old solutions are applied to problems because old thinking habits and behaviour have been reproduced. There is a contrast here between an insightful process and one which draws purely from past experience; i.e. the Gestaltists versus the associationists.

In terms of following my own path of exploration into how creativity has become recognised to be a valuable part of the problem solving process, the Gestaltists highlighted the way that people 'get stuck' in the way that they look at a situation and cannot rearrange the elements to come up with a solution. The Aha! exclamation, that often comes with the flash of insight and referred to in the introduction, can be attributed to this group.

3.4 Pellucid Problem Solving - 1920s

It was during the second decade of this century that there was a strong sense of clarity in discussion of problem solving processes; problem solving was expressed as a clear framework of steps. Hence the adjective I selected for the short discussion of this era. Although this era might be suspected of projecting a reductionist view of problem solving, as opposed to the holistic approach (albeit at a different level of focus) attempted by Selz and the Gestaltists, the insightful aspect of solution finding was reinforced. The themes of novelty and creativity were taken forward. Moving away from the findings of psychological experimentation and relying on introspective activities of subjects, Wallas (1926) put forward his four famous stages of the process of problem solving - preparation, incubation, illumination and verification. They

Luchins (1942) was later to look at the effect of past experience on problem solving processes; in fact it is not all detrimental.
are self-explanatory; it is in the illumination stage that the Aha! sensation is experienced.

Even today it is unusual to read any literature vaguely related to problem solving which does not make reference to Wallas. And, even when developing their own problem solving stages, authors do tend to simulate those of Wallas. While the intimacy of the ‘creativity community’ could explain this fact, I prefer to regard it as a tribute to the importance of his contribution.

The introduction of Wallas’ framework seemed to herald a new area of interest in problem solving; you will probably have detected the shift to an overarching perspective. While the cognitive processes remained of interest to the psychologists, in particular, there began a school of thought which assumed Wallas’ overview position; a position which I will accordingly retain.

3.5 Peremptory Problem Solving - 1930s & 1940s

As will be detected from the following narrative, classification of this twenty year period as ‘peremptory’ arises from the dogmatic, almost dictatorial, nature of approaches to problem solving which were prevalent during this time. Reliance on logic, expert knowledge and attainment of ‘the solution’ did not lend itself to challenge or appeal. Such an environment meant that creative thinking (or ‘productive thinking’ as people such as Wertheimer and Duncker referred to it) was a difficult ingredient to deal with; that is the message communicated from writers of this era.

Wertheimer (1945) reflects on a logical theory of thinking and on the association theory. For both, he recognises their limitations in dealing with creativity. If one uses logical thinking to describe processes of creative thinking, “... one has, then, a series of correct operations, but the sense of the process and what was vital, forceful, creative in it seems somehow to have evaporated
in the formulation" (Wertheimer, 1945, p10). In a comparative vein he wrote, “Similar difficulties arose in association theory: the fact that we have to distinguish between sensible thought and senseless combination, and the difficulty in dealing with the *productive* side of thinking” (Wertheimer, 1945, p11, original emphasis). Even the character of the problems Wertheimer chose to explore - predominantly mathematical puzzles - reflects the solution-led, technical expertise orientation he presumed.

It looked hopeful that Duncker was taking a wider perspective in his work when he started with the more general definition of: \"A problem arises when a living creature has a goal but does not know how this goal is to be reached\" (Duncker 1945, p1). However, he quickly moved into mathematical scenarios. A move perhaps not too surprising given that Köhler and Wertheimer were his teachers. Also not surprising that Duncker (1945) also refers to productive thinking as creative thinking.

So, again, it was solution-processes which were examined. While admitting that this view is limited Duncker (1945) attempted to justify it in his foreword: \"This restriction was adopted because such material is much more accessible, more suitable for experimentation. I believe, however .... that essential features of problem-solving are independent of the specific thought-material\". As might be expected, Duncker’s observations of the process of problem solving were expressed with specific reference to the goal: reformulating and recentring of the original goal, reformulating the goal to bring it closer to the givens, reformulating the givens so they are closer to the goal.

### 3.6 Protean Problem Solving - 1950s & 1960s

The strengths of the problem solving approaches from the previous era were recognised and exploited to great effect in the Second World War. Goal oriented approaches were ideally suited for the optimization of military
resources and logistics planning. However, a dictatorial environment, such as that of a battlefield, was not to be found in all civilian organisations. Thus the solution-processes were seen to lose effect in their transfer to business and industry. There was a need for approaches of a different character but such a need could not be satisfied overnight. A time of adjustment and modification lapsed, a time in which problem solving took on various forms - thus, an era of protean problem solving. This section will serve to demonstrate the versatility of problem solving during the 1950s and 1960s.

In Polya's work, we might recall similarities with Wallas' stages and with the mathematical bias of Duncker and Wertheimer. Drawing from his observations as a mathematics teacher Polya (1957) described the problem solving process in four discrete steps - understanding the problem, devising a plan, carrying out the plan, and looking back. In doing so he reinforced the notion that a problem is basically a requirement to reach a predefined state and that creative thinking is limited to within that boundary.

We should not however forget the concurrent activities of the psychologists in this era, as mentioned earlier. Inclusion of their contribution, by way of introduction to Hilgard, will slightly redress the balance but, as we shall find, he still thought of the process as a means to the solution. Hilgard (1959) was considering how best to encourage creative problem solving. Regarding problems as "... intellectual guessing games where there is a correct solution to be found ..." (Hilgard, 1959, p171) he stated that there had been two major types of approach to problem solving and creativity: "The first of these relates problem-solving to learning and thinking, as a type of "higher mental process" or "cognitive processes", to which problem-solving certainly belongs. The second approach, supplementary rather than contradictory to the first, sees creative problem-solving as a manifestation of personality and looks for social and motivational determinants instead of (or in addition to) the purely
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cognitive ones. The approach via learning tends to emphasize problem-solving in which a high-order product emerges, although not necessarily a highly original one, whereas the approach via personality tends to seek out somewhat more the elements of creative imagination and novelty" (Hilgard, 1959, p163). So, at least the notion of novelty first made explicit by the Gestalt psychologists had not been inadvertently misplaced.

The concept of creative problem solving was being tackled in other circles too. Gruber, Terrall and Wertheimer (1962) brought together papers from a 1958 symposium and wrote, “The participants in this symposium have approached the problem of creativity primarily as a problem for scientific understanding.” It is in this edited volume that Newell et al (1962, p 66), look at the definition of creative problem solving from the psychology literature, with somewhat vague and fuzzy boundaries, and go on to tell of creative activity as simply being a “… special class of problem-solving activity characterized by novelty, unconventionality, persistence, and difficulty in problem formulation”. They develop their own theory of problem solving based on information processing and computer programming and then use it to reflect on three topics that are often discussed in relationship to creativity:

“1. the use of imagery in problem-solving;
2. the relationship of unconventionality to creativity;
3. the role of hindsight in the discovery of new heuristics”

(Newell et al, 1962, p97)

In Kleinmuntz’s (1966) collection of papers from the first annual symposium on cognition, Green (1966, p3) commented that the work of Newell et al was a turning point in the psychological research on problem solving. Until that point, Green considered the work had been “sporadic”. It is interesting to note that Newell et al’ s general theory of problem solving does

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not consider that the problem solver passes through stages as the American psychologists had done - preparation, incubation, inspiration and verification. Newell et al’s perspective on problem solving was thus another variant in this protean period.

In the same collection, Gagne (1966, p129) appeared to criticise the creativity researchers of the late 1950s and early 1960s when he said, “Most writers on this subject, I take it, consider creativity much too exalted a kind of activity to be thought of in relation to problem solving”. Seemingly he prefers to agree with this supposed majority and openly admits to limiting the scope of his paper so that it does not attempt to deal with creativity(!). He goes on to develop a model of problem solving with characteristics of sequential action, threshold phenomena, non-graded responses and multiple connections (Green, 1966, p147).

Most likely as a result of the repercussions of war, this era reflects a diverse range of thoughts on creativity and problem solving. A distinct increase in academic interest - exhibited in the symposia - and profound new theories emerged from teams such as Newell’s. Instinctively, one might have predicted something new on the horizon.

3.7 Periscopic Problem Solving - 1970s

A periscope enables us to see things which are normally out of sight. I might be accused of liberally employing poetic licence using the related adjective in this context, but this was an era in which key players were recognising that there were aspects of problems which we might not see’ at the start. There was an explicit appreciation that problem solving was not about finding the one and only solution which came forth from the evidence in sight. Problem solving was now considered to be more complicated than that. It was becoming thought of as ‘messy’. There were not only quantitative aspects to take into account,
The main advocate of a different approach to problems and problem solving was Ackoff, but George was indicating something similar. George (1970, p29) limited his classification of problems to two types. Firstly the sequential kind “where a series of events occurs in time and where information at any time may be incomplete, and material may never, in some cases, be complete.” Secondly, “where the problem itself is precisely to know what the problem is. In these circumstances, it is the search to understand the problem, usually in the light of knowing that goal-seeking activities are not as yet being carried out effectively that is the problem.” While this second type is not sequential in time, it might reduce to one which is.

An intangibility was becoming associated with problems. As Ackoff (1974, p237, original emphasis) puts it “...problems exist only as abstract subjective constructs. ...even if they were objective states, they would not have solutions, if by “solutions” we mean actions that extinguish a problem or put it to rest ...... we [are] dealing with shadows rather than substance.” Ackoff refers to the unstructured states of confusion as ‘messes’ and introduces the systemic property of problems. The fact that they do not exist in isolation, in itself, has implications for decision theory. “A mess is a system of external conditions that produces dissatisfaction. It can be conceptualized as a system of problems .... a problem is an ultimate element abstracted from a mess.” (Ackoff, 1974, p237)

As mentioned, the time element of problems deserves attention. If a problem, once solved, is to stay solved - “First, the relevant environmental variables must not change significantly after the solution is implemented. Second, the relevant values of the decision maker and the efficiencies with which he can implement possible choices must not change. .... many of the
problems we try to solve change while we are trying to do so. In such situations we often obtain solutions to problems that no longer pertain" (Ackoff, 1974, p238). Ackoff summarises his paper by pleading for attention to be paid to “mess management”; to improve responses to messes over time and to study the aesthetics (intrinsic and extrinsic values) of decision making.

Others were also grappling with the loss of ease of categorisation of problems. In the previous era, Reitman (1965) had looked at four categories of problem according to how well the given and goal states were specified: well-defined or poorly-defined. In the new era Greeno (1978) had put forward a three part typology of problems - problems of inducing structure, problems of transformation or problems of arrangement - but readily acknowledged that, in general, problems did not neatly fit into one or other of the categories.

Towards the end of this era Scandura (1977) attempts to bring about a synthesis in the study of human problem solving by deliberately bringing together those methods and results which have “cross disciplinary implications” including artificial intelligence, computer simulation, various types of psychology, individual differences, education. Creativity is barely mentioned in this text, yet it is pertinent to note that these are the dominant areas of interest in creativity.

The understanding of problems as messy situations is pursued by Sanderson (1979, p2) “Too often the problems we are dealing with are ill-defined and turn out to be more than one problem, or have multiple parts moving at different speeds, with all of these getting cheerfully out of control”. He proposes a dynamically balanced strategy and says (Sanderson, 1979, p10): “.... we must be imaginative in thinking out what a problem really involves, but we must be realistic and practical in deciding how it can be tackled. We must have novel and innovative ideas for solutions, but we must be able to turn these
sanderson divides the problem solving process into a sequence of major areas: planning, defining or diagnosing, idea generation, solution building and solution assessment. The blend of imagination, judgment and organization is weighted differently in each phase.

So the periscopic era of problem solving was one in which there was a realisation that problems are not always well defined with a clear starting and finishing point. Nor is all relevant information readily available. In parallel with this realisation, the importance of creativity to successful problem solving is gradually being recognised.

The next two eras, which take us as far as the present day, show how the process of problem solving has adapted to face the challenges posed by 'mess management'. Not only has another fundamental underlying theory been brought to the forefront of management arenas - that of systems theory - but the style of problem solving has also undergone a change. With a shift in emphasis from providing a specialised service to one of empowering individuals, problem solvers have responded by changing their role of an expert to one of a facilitator (see Schöen, 1983; Taket and White, 1995(b)). In addition, there now appears to be an open invitation for creativity to become part of the problem solving process (see for example Flood and Jackson, 1991(a); Fobes, 1993; Morgan, 1993; Flood, 1995(b); Lumsdaine and Lumsdaine, 1995). The following sections will explore these shifts in a little more detail.

### 3.8 Participative Problem Solving - 1980s

Acknowledging that problems do not exist in isolation and that often there are aspects of soft complexity to consider, brought increased uncertainty to the process of problem solving. No longer was it appropriate to apply solely technical expertise - in general, mathematical logic - to problematic scenarios.
The clarity of givens and goals, for some situations had been lost. This potential vagueness in problem solving brought a new wave of activity; a result of which was the development of techniques for structuring the mass of information which lurked in fuzzy situations.

So, the emphasis has changed from solving problems to structuring them. Recognising this change as a significant new direction for both the OR and the systems movement, Rosenhead gathered together a variety of methods which approached problems with that intent. Rosenhead (1993) is therefore a particularly useful collection including, for instance, Eden’s SODA and cognitive mapping, Friend and Hickling’s strategic choice approach and Rosenhead’s own robustness analysis. Alongside these changes in OR and systems circles, there were others who were gathering, categorising and unifying techniques for problem solving. VanGundy (1988), for instance, provides an inventory of about a hundred techniques of structured problem solving.

An important framework from the systems field, Checkland’s Soft Systems Methodology (Checkland, 1981; Checkland and Scholes, 1989), was another member of Rosenhead’s collection. This example, along with Ackoff’s Interactive Planning (Ackoff, 1981), epitomise the participative characteristic of this era. Commitment to involving stakeholders in the problem solving process was made explicit by Ackoff and Checkland. They appreciated that individuals involved in a problem situation were well informed, probably more so than an external consultant, and that their inclusion added to the richness of the process. Especially for Ackoff, there was a moral obligation to include them. Of course, ownership of the resultant ‘solution’ also aids the implementation stage. Both SSM and IP are founded on a principle of participation.

\*\*In this introductory chapter to problem solving, the specific details of these problem solving frameworks are deliberately not discussed. In subsequent chapters, where the creativity element is drawn out, it is more appropriate to enlarge on the operational procedures.\*\*
With the move to encourage participation of stakeholders in the problem solving process, there was a concurrent change in the role of the problem manager - be they an external consultant or an organisational member. No longer was it appropriate for them to impose recommendations derived purely from an expert perspective. There was increasingly a requirement of the problem manager to act as a facilitator; the skills of a facilitator would draw out the knowledge and expertise from within the stakeholders. A very different role for a very different process; a process which could ultimately empower the individuals concerned.

Particularly in the systems field, a range of problem solving frameworks were either emerging or assuming a more prominent position than in previous eras. Critical Systems Heuristics (Ulrich, 1983), Strategic Assumption Surfacing and Testing (Mason & Mitroff, 1981) and Viable System Diagnosis (Beer, 1985) are three such frameworks. But, if I am now to focus on the creative element within approaches of this period, I would have to look to SSM, once again. Checkland’s notion of a system as an abstract entity, rather than a tangible entity such as a hard system, really opened the doors to creative thinking in these frameworks. The conscious transition from real world thinking to ideal, systems thinking was a breakthrough in the acceptance of creativity being an integral component of systems problem solving.

3.9 Pluralistic Problem Solving - 1990s

The plethora of problem solving frameworks which came to the fore in the previous era could have caused confusion. Which one ought to be applied? An isolationist or imperialist standpoint could have been assumed and a regression to the expert role. However, there are those who have taken a more progressive and constructive standpoint, seizing the diversity of frameworks.

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*Footnote: I refer the reader to footnotes in Chapters One and Two for my understanding of these standpoints.*
and promoting a pluralistic approach. There are those who respect the different foundations of methods. They have moved towards a complementary approach in which strengths and weaknesses of methods are identified. In doing so, the problem situation remains the centre of attention as problem solving methodologies are ‘fitted’ to it, rather than to the skills of the problem manager.

A major advancement in this era which promotes such a complementary approach to problem solving is Flood and Jackson’s (1991(a)) framework - Total Systems Intervention.’ By exploring both the problem situation and any candidate methodologies in a creative manner, the most suitable combination of methodologies is selected for the circumstances. The creative aspect is crucial to the success of TSI’s application.

A complementary approach does not ignore the participative principle. TSI expresses participation as one of its underlying principles. So, there is an accompanying facilitative role, and an intent to empower from the start. However, the facilitative element is reinforced by the overriding pluralistic nature of the approach. For how can one be a so called ‘expert’ in all the methods?

In most recent years there has been a surge in momentum of writers who suggest they are focussing on creative problem solving; examples were mentioned in the introduction to this section. However, the focus is more on ‘creativity and problem solving’. We would appear to be only at the start of the knitting together of creativity with problem solving. At present, sometimes creativity is rather like an accessory; it is not yet an integral part of the process but more of a potentially effective, attractive addition. The next era might provide guidelines for a genuine synthesis.

As for footnote 4.
4.1 Critical Creativity

Just from the few chronologically ordered examples it is confirmed that ‘creativity’, albeit in various guises, is a topic with a long history and one that has traversed various eras. I suggest that there is another era on the horizon. That is, there is another phase of development for creativity.

But first let us reflect on issues from previous eras. An integration of the ideas presented demonstrates that there are several elements which can contribute to the notion of ‘creativity’: origination of a creative product, evidence of a creative process, an element of spontaneity, practice of personal reflection and an evaluative component, for instance. With such a range of contributory elements it is not surprising that ambiguous definitions arise, sometimes thought to be equivocal.

If we then recall the range of expressions for creativity which have been included in the preceding sections, and from whence they come, it is clear that the context of the creative process undoubtedly influences the emphasis on particular elements. It can be seen how a definition from a psychologist varies from that derived by someone with an interest in creative art, and so on; to say nothing of the corresponding differences brought about by time.

However, one element has never been disputed. A common attribute which has become apparent is that creativity is valued - valued by particular parties in particular contexts at a particular time - but nonetheless always valued. This element of value is very important because it distinguishes creativity from concepts such as ‘novelty’, ‘originality’ and ‘ingenuity’. Devaluation and trivialisation of creativity is to disregard it.

Given that there exists some ambiguity in the notion of creativity, even
today, and taking for granted that there is an immense store of valuable research evidence and hypotheses that we could legitimately draw from, I propose that the next era's creativity will arise from a complementary approach. I call this future form 'critical creativity'. To incorporate critical creativity into a problem solving framework would be to integrate a form of creativity which is not only practically useful for organisational problem managers but which takes into account ideas developed from many viewpoints, creates diversity by encouraging 'quantity' and finally, allows judgment to be undertaken locally. This thesis goes on to develop the idea of critical creativity and to operationalise the concept.

4.2 Creative Problem Solving

While the current era is providing some guidance over the choice of problem solving approaches, and is already moving towards a complementary approach, we are still left with a plethora of creative enhancing techniques (as will be emphasised in the next chapter) which we need to choose from. This is where the concept of critical creativity reemerges. A pluralistic problem solving approach offers guidance in the choice of approach; critical creativity offers similar guidance for creativity. When critical creativity is practised within the context of a complementary problem solving framework, a 'creative problem solving' approach can be said to be practised. This is the approach that I predict will emerge in the next era.

5.0 Summary

Undertaking a literature review was a discrete research step identified within my chosen research strategy. However, it was not a step which would be peculiar to PAR for any research methodology would dictate that a survey of the past and present situation be undertaken. In doing so the proposed research can be positioned and its relevance identified. This is what I have achieved through this step.
This research step has brought together a story of the study of creativity. Not only have characteristic eras been identified but, in parallel, examples of definitive expressions have been presented. In addition, the story has covered three time periods: the past, present and future. It has been shown how fragmented interests were brought into coherent debate and, eventually, into an eclectic area of study. Now, in the 1990s, we have as our springboard the realisation that creativity can take many forms; that which is creative in one context need not be considered creative in another. There is also a general agreement that everyone is capable of being creative; that there is a wide range of origins of creativity. An approach which is able to usefully use the knowledge from these many sources in a complementary fashion, rather than in an imperialist style, is a view which will bring together the fragmented studies of creativity. The various theories and schools of thought could profitably be drawn together in a reflective manner for the future era of critical creativity.

But critical creativity is not only concerned with drawing together theoretical foundations, it is equally concerned with the practical aspects of utilising creative thinking in the process of problem solving. This thesis attempts to raise them both to the same level of sophistication, developing a coherent whole. It has been shown how the process of problem solving has changed from relying on past experience and ‘trial and error’ associations, to one which emphasises mathematical logic, to one which attempts to encompass both hard and soft complexity. It has also been mentioned how the role of the problem manager has developed from being that of an expert to that of a facilitator. In addition, the attempt to include creativity has been recognised along with the prospect of developing guidelines for its effective inclusion.

So, I am calling for a new form of creativity - critical creativity. The following chapter is calling for the same when attempting to deal with the diversity of purpose of creativity enhancing techniques.
CHAPTER 4

1.0 Introduction

Having explored eras in creativity and problem solving from an overview perspective, the boundary of discussion is now tightened as I address the context for which my thesis is intended. While creativity can be useful, and often fun to pursue in all sorts of scenarios, it is towards organisations that I direct my research. More specifically, I am interested in ways in which organisations can attempt to surface their members' creative potential.

So, I start by introducing my understanding of organisational creativity and suggest some reasons as to why I consider it to be such a necessity today. Then I move on to consider creativity enhancing techniques. With a common overarching aim, the hundreds of known techniques focus on a range of different levels of purpose. A taxonomy based on these purposes provides the framework for the rest of Chapter 4.

1.1 Operational organisational creativity

If creativity is to be recognised as a necessary part of organisational problem solving, it is important to characterise creativity in language which appeals to practising managers. The associated language must 'fit' into organisational settings. Previous chapters give a start towards an operational definition for organisational creativity. We have learned that creativity contains an element of spontaneity; it is often unprovoked and 'off-the-cuff'. Also, we know that creativity is always valued - it is considered 'valuable' by the parties involved. In addition, we can summarise our understanding of the creative process and product. Creativity can be expressed in a creative process - a process in which judgment is suspended and in which previously held

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1 A group of individuals working towards a common goal.
assumptions are discarded. Finally, creativity can be expressed in a creative product - a product which reflects novelty in its design or application.

There is, however, a level of ambiguity in the above statements. Who is to decide what is novel? Who is to declare what is valuable? Creativity's dependence on context is becoming more and more apparent. It is still not sufficient to speak of organisational creativity, for the specific details of the setting influence participants' understanding of creativity. Different settings warrant different definitions; a point which will be elaborated on later. These are all issues which critical creativity is capable of addressing.

1.2 Today's need for creativity

The complex arena of organisational life inevitably brings numerous difficulties and messes. At times, in our attempts to improve situations, we may feel as if we are trapped within a particular mindset; not making any progress. Tried and tested approaches may be hindering the emergence of novel solutions. Firmly established viewpoints may be obstructing new insights. If we were to consider a couple of Morgan's (1986) popular metaphors of organisation - the organism and the machine for instance - we might say that the organisation 'is stagnating' or 'stuck in the same gear'. Original thought is needed for 'reintroducing fresh air' and 'changing gear'. A non-metaphorical equivalent is that 'originality is essential for successful management of complexity'.

I now take the functional entity idea a little further. Creative thinking could be the key for releasing an organisation from the dangers of stagnation. A dynamic organisation is proactive, preferring to face a challenge rather than languish in its past success. A dynamic organisation will not stagnate. It is not satisfied with 'good enough'. Nor is it satisfied to merely react to market forces, to follow its competitors or to simply keep its customers content. There is a commitment to achieving more. A dynamic organisation aims to provoke
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changes in the market, to lead its competitors and to impress its customers. A dynamic organisation is also one which recognises creativity, has a value system which appreciates it and exhibits a culture in which it can be openly expressed. In fact, creativity is positively encouraged therein. There is no fear of the spontaneity and unexpected consequences which may arise from creative processes. The immense potential benefits of creative thinking may well outweigh the perceived related risks. A dynamic organisation knows this and behaves accordingly.

2.0 Creativity Enhancing Techniques

While it has been suggested that creativity exhibits a spontaneous element, creativity does not often emerge from 'out of the blue'. Given that creativity is highly valued, it is not surprising that a lot of work has focussed on developing creativity enhancing techniques. There has been a commitment to finding the most successful ways of unleashing creativity. Each of them appears to try to produce an environment which is conducive to creativity. So, before proceeding with an examination of these techniques, a discussion of such an environment is undertaken.

2.1 Environment conducive to creativity

It could be suggested that young children are masters of the practice of creativity. One only has to watch infants at play to realise that their environment - physical, mental and emotional - is near-perfect for overt exercise of imagination. Children are seemingly unaware of any constraints to their thinking; they do not yet experience the pressure to conform to institutional expectations or to respond to personal desires of ambition. There is innocence of such barriers to creativity. However, in the transition from child to adult there

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2 I tend to use the terms technique, method and model interchangeably when I refer to mechanisms through which it is anticipated that creativity will be enhanced. The terms methodology, approach and framework imply less superficiality than the aforementioned; these tend to be based on well-grounded theories and strong philosophical foundations.

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seems to be a loss in the natural ability for creative thought and action. Conformity is a major culprit. Jules Henry, an American anthropologist, is clear in his reasoning over this evaporation of creativity - societies do not survive by everyone being unique. Specifically referring to education, he says: “The function of education has never been to free the mind and the spirit of man, but to bind them; and to the end that the mind and spirit of his children should never escape *Homo sapiens* has employed praise, ridicule, admonition, accusation, mutilation, and even torture to chain them to the culture pattern.” (Henry, 1963, p286)

Hence, within the boundaries of some educational establishments, creative behaviour can be mistaken for mischievous, disruptive behaviour and consequently be discouraged. If we also believe that successful facilitators of creativity must themselves be creative¹, and then there is consideration of teachers' long term attendance in educational establishments, then the gradual stifling of creativity in children is easily understood. Creativity enhancing techniques become a prerequisite in adult life.

The basic foundations of methods for enhancing creativity have been surfaced both here and in Chapter 3. They attempt to reproduce the atmosphere of our infancy and to create an environment in which traits of creativity are encouraged to flourish. Such an environment arguably is free of constraints; free of external evaluation, yet encourages one to be self-critical of previous assumptions and appreciative of non-conformity. The difficulty is in achieving an environment of this nature; and this, of course, is where creativity enhancing techniques play their role.

2.2 The Chosen Taxonomy

Given that there has been, and still is, so much interest in creativity

¹ This is a belief which Ackoff, in particular, has personally stressed to me.
enhancing techniques, there were various options for arranging the enormous amount of material. This section goes on to illustrate some of the options. As one might expect from an Action Research strategy, it was through systemically and creatively exploring the various arrangements that I came to make a choice. Given the intention of introducing my hypothesis to the practical arena, I engaged in dialogue with practitioners in the creativity field and allowed their needs to influence the direction I finally chose.

One way was to order the survey chronologically, perhaps highlighting the launch of each new project. I could have considered why specific studies were initiated and defined their objectives. I could have identified their starting assumptions and the new understanding which came forth. Indeed, one can learn a great deal from such a standpoint. In putting together collected works, writers such as Isaksen (1987) have consciously taken this historical perspective. Collections from other editors, Parnes (1992) for instance, simultaneously relate chronological developments in creative studies while pursuing other objectives.

Another option was to look at contributions to the field on a geographical basis. This would no doubt have emphasised the United States as a major player. America has been a ubiquitous player from the 1950s when her research centres began to devote substantial effort to the subject. Some of these early institutes are still thriving today - the Creative Education Foundation has survived over forty years under the auspicious direction of Alex Osborn, and now Sidney Parnes. Organised symposia in the early days, such as those chaired by Calvin Taylor at Utah in the late 1950s, and that recorded in Anderson (1965), afforded opportunities for interested parties to cross-fertilise their ideas, cultivate their findings and motivate attendees into further work. There have been flurries of activity in other countries but none have experienced the recognition of America or made such an impact on their societal behaviour.
Freeman, Butcher and Christie (1971) mentioned the contributions of eleven other countries. The National Foundation for Educational Research, England; Ontario Institute for Studies in Education, Canada; and Ajmer College, India; (to name but a few) have undertaken studies. Yet, in 1971, 66% of world-wide research activities was undertaken within the boundaries of the United States. Over twenty years later, while American research is probably still considered to be at the forefront of the field, the rest of the world has made, and continues to make, significant and respected contributions. The UK's best known contributors, Tudor Rickards (1985, 1990, 1994, 1995) and Simon Majaro (1994, 1995) are renowned for encouraging creative practices in organisations and of course, Edward de Bono's creativity program, in Malta, long since gained world-wide recognition. Parties from Australia have ardently incorporated the CoRT program of de Bono into school curricula and reported noticeable improvement in the thinking of participants (Edwards, 1994; O'Brien et al, 1994). However, to organise research contributions according to their country of origin did not seem appropriate; such a reductionist approach could not do justice to the interconnectedness of the field.

A glance at established mainstream debates - personality traits, classroom approaches, intelligence and creativity, for example - promptly discloses their emergence as predominantly from the disciplines of education and psychology; although, as suggested in Chapter 1, the current trend is for goal-seeking organisations to be taking the lead. So, perhaps another fruitful arrangement of material could be with respect to the apparent dominant groups; an arrangement tried by Dingli (1994). But again, the division is severely blurred. Where to 'draw the line' is not clear. The interdisciplinary nature of studies cannot be ignored. So, in a bid to capitalise on the multi-dimensional nature of creativity studies yet provide a coherent summary, the remainder of the literature review is revealed by the presentation of arguments which have

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evolved from different levels of interest; from studies which have focused on different sources of creativity. By organising a review in this manner, issues arising from chronological ordering, geographical participation and dominant disciplines also become apparent. Given the wide variety of disciplines which have actively shown an interest in the study of creativity, it is not surprising that a range of starting points has been taken. Indeed, one almost expects psychologists, educationalists, economists, industrial players, and so on, to assume contrasting professional perspectives.

As we shall see, while a selection of researchers focus on the individual as a source of creativity, there are others who focus at a finer level of detail and concentrate on cognitive processes or on the mind’s nerve impulses. At a coarser level of detail, attention has been paid to encouraging creativity at an organisational level and at global levels. Work at each distinctive level has made valuable contributions to the study of creativity. West and Farr (1992) considered innovation from three levels - individual, group and organisation - but within creative studies there has not yet been a similar integration of information. So, I use these levels of detail not only as a means by which to organise the continuation of a literature review but also as a means of identifying the purpose of creativity enhancing techniques.

3.0 Six Levels of Focus

The six levels of focus which I have identified within the literature relating to creativity enhancement are, in increasing order of physical magnitude, as follows:

- Atom
- Mind
- Individual
- Group
- Organisation
- Nation
Understandably, these six levels have not received equal attention from the creativity community - not yet, at any rate. In fact, I have been able to identify one of the levels, the atomic, from only the most recent literature. Factors outside the mainstream creativity movement, such as management fads and educational biases, undoubtedly influence activities in studies concerned with creativity enhancement. Those levels which are in vogue for a wider audience are naturally given more attention. Perhaps we could enquire as to what determines a particular level to be fashionable and why we should have affinity with any level. As this chapter proceeds, I think it will become apparent that it is those levels which we feel comfortable with - that is, those which we are able to associate strongly with and, to a certain extent, to control - which have tended to be emphasised. I now go on to develop this notion of 'feeling comfortable'.

For instance, from the level of the individual, it is relatively straightforward to reassure ourselves that certain persons can be creative; there are numerous examples whose creative abilities we could choose to aspire to. We could verify these people's common traits and, if we wish to improve our own creative potential, attempt to mirror them. If we seek other potentially creative individuals, we could look for evidence of similar characteristics. A parallel argument could be asserted for creativity enhancement at a nation wide level. Identification of the culture, perhaps, of a notably creative nation could be made. Efforts to recreate this culture in another nation could be labelled as part of a creativity enhancement programme.

It has been, and still is, quite uncomplicated to relate to both of these examples. When, let us say, the atomic level is discussed, there might not be quite the same affinity. Given that I appreciate the different affinities for the various aspects of creative studies, and that I eventually introduce a methodology which deals with any selection processes therein, I place no
emphasis on any particular level here. In a holistic approach, such as the one I am developing, each level is able to contribute. So, treating each level in the same manner, I introduce the basis for its inclusion in this taxonomy, and then put forward a creativity enhancing technique which aims to operate at that particular level.

3.1 Atom

Literature spawned from this level of focus is relatively new and consequentially sparse. Today, a lot of the ideas are still thought to be revolutionary. Tomorrow, they may be 'second nature'. Activities based on the acceptance that creativity originates from the atomic level are not yet commonplace. At present, they are not easy for the lay person to conceptualise or apply. However, there are those who continue to pursue this line of investigation and endeavour to attract increasing interest.

Although several writers make passing reference to this level of focus, the major issues of discourse can be traced back to just two sources - those emerging from David Bohm and those from Marc Bosche. Even within this level, there could be said to be a subdivision with, as will be seen, Bosche exploring slightly finer detail than Bohm. It is their theses which I now introduce.

3.1.1 Bosche's 'Brainwave Frequencies'

Bosche's approach explains thinking and, ultimately, creative ability. The first impression may be that Bosche is interested in creativity from the level of the mind, but he actually goes much deeper. The French man goes beyond the premise that all thinking is carried out in the rational consciousness and explores the relationship between different states of consciousness and different types of thinking. The states of consciousness are characterised by an associated brainwave frequency; measurement of which is performed with an
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electroencephalogram (EEG). By observing a range of states - from deep sleep, to dreaming, to consciousness and up to a state of extreme emotion such as anger or excitation, Bosche (1994) has been able to plot the increased brain activation, in terms of alpha or beta brainwaves, and define a corresponding creative state 5 for a particular frequency range. For example, an adult in a rational, discursive level of consciousness is probably emitting beta brainwaves of 12-14 Hertz. Creativity at this level is based on combination and association. In contrast, an adult who is relaxing or entering sleep will probably register alpha brainwaves of 8-12 Hertz and likely to centre creative thinking on imagery and feelings.

The second example is a state in which the consciousness is likely to be slightly more relaxed from major obtrusive emotions than in the ‘daytime’ state from the first example. So, a different origin of creative activity is able to operate. Harth (1993, p75) also talks of the imagery aspect of creativity, but only as part of the neural feedback circuitry of mammals. He supposes it to be the “peripheral end of a creative loop”, and does not offer other alternative forms of creativity. One could go through Bosche’s other states and distinguish between the creativity experienced in states of anger, hypnotic states and so on. The underlying message, though, is that there is the potential to influence and determine an individual’s creative ability through their brainwave frequency.

3.1.2 Bohm’s ‘Implicate Order’

Bohm’s model arose out of research studies concerning quantum physics and relativity; it might seem an unlikely contribution from which to further our understanding of creativity but it is one which appears to be gaining increasing notoriety. Bohm’s theories have been expounded by supporting eminent academics. For instance, while it would be unfair to class Sheldrake’s

5 See Appendix I for a copy of Bosch’s results

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Bohm’s work is probably technically exclusive to the same extent as that of Bosche, but Dohmen (1994) concisely explains its foundations in her presentation of projective geometry as a model of creative thinking. In a drastic precis of the famous dialogues with Weber (1990), it can be told that Bohm, and also Sheldrake, see habit and creativity as being intrinsically linked. But there is much more substance to their claim: it is to Dohmen’s paper that I turn to extend the discussion. Her account, though not directed to a lay audience, is understandably less detailed than Bohm’s own original papers but provides sufficient background information for the purpose here.

Bohm’s model was developed in an attempt to account for the apparent chaotic behaviour of individual particles of matter. His ‘implicate order’ is a model in space which is the source of all that is visible. Beyond the ‘implicate order’ there is the ‘super-implicate’ order and so on, until there is an order with an infinite, n-dimensional ground. In all of the orders, matter and consciousness are considered to be unified. According to Bohm, his various different orders relate to one another by a process of folding and unfolding - “objects around us that are visible to us are unfolded and therefore manifest, other objects or thoughtforms might be enfolded in the implicate order, waiting to be explicated and therefore visible” (Dohmen, 1994, p163). So, there is a process of creating and recreating which is subject to the process of folding and unfolding of the numerous layers. The feedback of information, into the implicate, about anything that happens in turn has an effect on that field and on future explications. While much of the discussion from this micro level is aimed at creativity in a universal sense, Bohm’s theory clearly has implications for creativity at a local level. His theory could be legitimately translated into an organisational context.
Bohm’s work on creativity at this atomic level is not supported by empirical studies to the same extent as Bosche’s; nor is its application for enhancing creativity in organisational problem solving as straightforward, evidently. It is thus from Bosche’s viewpoint that I now move on to introduce a technique for creativity enhancement.

3.1.3 Moderating Brainwave Frequency.

I am not aware of this being a technique which is actively promoted at present, although Greer’s (1996) ‘smell and sound creative stimulation technique’ seems to be implicitly targeting this level. However, it is an area which I am sure will be explored further as a means of increasing creative ability. If an individual’s brainwaves are able to be coaxed into oscillating at predetermined rates, then there is the potential to influence that person’s creative state as defined by Bosche.

The process of deliberately exciting or suppressing brain activation clearly has serious ethical dimensions. But it could be a surprise to learn that there are inadvertent changes in oscillation rate brought about by routine events. Intake of stimulants, as seemingly innocent as a cup of a coffee, could excite brainwaves to a corresponding state of emotional creativity. Intake of alcohol could induce the opposite effect and take the individual down to a state of sophronic creative thinking. So, it is feasible that these ‘natural’ means could be emphasised more in attempts to modify creativity.

Research at this level of detail is clearly not easily understood by non-specialists in quantum mechanics. It is relatively early days; the theories are still in a format which would not necessarily appeal to practitioners of creativity enhancement techniques. Once they are presented in a form which makes them immediately accessible to a wider audience - a more commercial product - they will no doubt bring to bear more influence on the creativity movement.
I now move up a level of focus and introduce the main creativity debates centred on the mind, finally describing a creativity enhancing technique operating at that level.

3.2 Mind

The study of cognitive processes - their taxonomical position being at the level of the mind - has contributed immensely to creative studies. With players from the field of psychology actively dominating proceedings, particularly in the 1960s and 1970s, there has been a focus on the various attributing thought patterns. Complex theories have been developed. Koestler's work is an example of such a theory which is presented here, chosen for presentation on the basis of its infiltration into so many subsequent recognised works on creativity. The roots of Boden's (1990), de Bono's (1970 for instance), Buzan's (1995), and Gordon's (1961) works, to name a small sample, can be found in Koestler. They all rely on, even if they do not explicitly refer to, Koestler's understanding of the creative process. So, it is Koestler's bisociative theory which I now introduce.

3.2.1 Bisociative Theory

Koestler has long contributed to the literary world. His main text on creativity entitled “The Act of Creation” was written in the 1960s; its argument has retained popularity to present day, demonstrated by its many reprints. Writing of creativity from a psychologist's point of view, Koestler (1981, p 16-17) discusses the creative act as “... a kind of do-it-yourself psychotherapy where the traumatic challenge is intellectual instead of emotional, for instance, new data which shake the foundation of a well-established theory, observations which contradict each other, problems which cause frustration and conflict - or the artist's perplexities in trying to communicate his experiences through the blocked matrices of conventional techniques.” He also makes reference to some sort of relationship between creativity and habit, as do Bohm and Sheldrake.
mentioned earlier. While the latter develop the principle that creativity arises out of habit, the former says that “The creative act, by concentrating previously unrelated dimensions of experience, enables him to attain to a high level of mental evolution. It is an act of liberation - the defeat of habit by originality.” (Koestler 1978, p96). He went on to define a basic pattern that all creative acts seem to have in common. Using a combination of Poincare’s theory, which stresses the importance of unconscious processes in creative problem solving, and Freud’s theory of the existence of secondary-process and primary-process thoughts, Koestler developed his process of ‘bisociative thinking’.

The belief that creativity involves novel combinations of ideas, and that it is the unconscious which tests these combinations, underpins his theory. For Koestler, ideas exist in matrices; in normal, conscious (associative) thinking, one idea leads to another within the same matrix. Creative acts involve bisociative thinking. Creative acts involve moving from one matrix to another.

He talks of the perception of a situation or idea in two self-consistent but habitually incompatible frames of reference. There are said to be three possible results of the interaction of two independent matrices of perception or reasoning. Humour often acts as the link between each matrix, often in the form of a focal concept or word. The three forms of interaction are summarised below.

<table>
<thead>
<tr>
<th>Interaction</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision</td>
<td>Laughter</td>
</tr>
<tr>
<td>Fusion</td>
<td>Intellectual synthesis</td>
</tr>
<tr>
<td>Confrontation</td>
<td>Aesthetic experience</td>
</tr>
</tbody>
</table>

These three types of interaction led to his three forms of creativity mentioned in Chapter 3 - “... artistic originality, scientific discovery and comic
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inspiration". (Koestler, 1978, 1981). He also suggests that all patterns of activity are trivalent and rely on the players of Artist, Sage and Jester. Each domain is characterised by the different intentions and emotional climates tabulated below.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Player</th>
<th>Intention</th>
<th>Emotional climate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humour</td>
<td>Jester</td>
<td>Make us laugh</td>
<td>Touch of aggression</td>
</tr>
<tr>
<td>Discovery</td>
<td>Sage</td>
<td>Make us understand</td>
<td>Neutral</td>
</tr>
<tr>
<td>Art</td>
<td>Artist</td>
<td>Make us marvel</td>
<td>Sympathetic</td>
</tr>
</tbody>
</table>

An awareness of these interactions can be useful when aiming to enhance creativity from this level. A technique which encompasses both this level and this theory is synectics. It is now introduced.

3.2.2 Synectics

Synectics is a Greek word which refers to the joining together of different and apparently irrelevant elements. The synectics process, originally developed by Gordon (1961), but from which a number of derivatives have evolved (Prince, 1970 for instance), relies on the stimulation of creativity from repressed thoughts. In a creative problem solving exercise, metaphors and analogies are used to restate and review a problem situation so as to bring forth a creative solution. Using Koestler's terms, metaphors and analogies are used to force interactions between different matrices in order to encourage originality.

It is clear from the title of his account of synectics that Prince (1970) would prefer to think of the process as focussing on the level of the group, or even the individual. However, he does not deny that its principles lie in psychoanalysis, and therefore justifies its position in my taxonomy. For, in its aim to alleviate constraints and conformity, encouraging movement out of a favoured matrix, the process includes an 'excursion', or a 'holiday', for the
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mind. Ideally facilitated, I suggest, by a professional psychologist, synectics bids to depart from the usual pattern of thought on a speculative journey to integrate internal and external worlds. The transition between varying psychological states needs sensitive handling.

The next level of focus I have selected is that of the individual. I now present discussions which have a comparable history to those of cognitive processes - those of personality traits and their contribution to the creativity movement.

3.3 Individual

The simplification of cognition studies to the identification of personality traits, that is the identification of enduring psychological properties, enabled the translation of theories into operational practices. Outputs from academic research, often in the form of questionnaires for assessment of personal inventories, became firmly implanted in organisational settings. It is this focus and perspective which I focus on here.

3.3.1 Personality Traits

As mentioned in the previous chapter, the majority of psychologists researching in the 1950s and 1960s were not interested in creative problem solving; they were more interested in understanding cognitive processes associated creative thought. Hence, most of their work went unnoticed by industrial leaders. There were a few exceptions; one was Guilford (1976). He hypothesised that individuals possess traits, some of which were thought to be related to the capacity for creative thinking. Through carefully devised tests for the measurement of some of these traits, specifically testing for the fluency, flexibility and originality of a subject, one could distinguish between creative and non-creative individuals.
Particularly during the 1960s the notion of being able to select potentially creative individuals held great appeal. Besides Guilford there were other American psychologists who gained recognition for their contribution to the debate about the relationship between creativity and personality - Roe (1953) and MacKinnon (1963, 1965) for example. They found that personality differences were more crucial to creative thinking than differences in intelligence. While Roe came to this conclusion from detailed observations of scientists who had made creative contributions to their fields, MacKinnon studied a far wider range of subjects including architects and air force officers.

Other theories contribute to the study of the relationship between the individual and creativity. Jung's (1971) psychological types, \(^6\) Kirton's (1976, 1994) adaptors and innovators\(^7\) and Amabile's (1983) social psychological model of individual creativity \(^8\) are three. King (1990) makes reference to a few more, but it should be noted that he is discussing innovation - creativity with an intention to benefit - rather than creativity, and limits his review to the workplace. In keeping with the current trend to guide a future theory of creativity away from the genius view, the possession of appropriate inherited traits and a suitable biographical record seemed to be losing some significance. Some may even consider it controversial or doomed to failure (Weisberg, 1986, p88). Gardner (1993), however, continues to emphasise the genius view and, in his provoking account of seven famous creative individuals, develops another framework for the analysis of creative ability. Surfacing characteristics from three levels - referred to as the individual, domain and field - he compares

\[^6\] Jung's refers to the two basic psychological types as introverted (attitude types) and extraverted (function types). Each type will exhibit different conscious and unconscious thinking, which could influence their creative thought processes.

\[^7\] Kirton's Adaption-Innovation theory locates everyone on a continuum ranging from 'highly adaptive' to 'highly innovative' depending on their style of decision making. Adaptors are likely to concentrate on 'doing things better' while innovators are likely to concentrate on 'doing things differently'.

\[^8\] Amabile's social psychological model recognises that social factors also play a part in an individual's ability to think creatively. In particular she emphasises motivational factors.
the biographical detail of people such as Picasso, Freud and Stravinsky and identifies common themes.

With growing acceptance of a universal ability to be creative, there is increasing emphasis on the cultivation of the ability rather than expecting creativity to emerge from certain people. In their day, though, studies relating to personality traits had a major impact on organisational life. Businesses and industries used the theoretical foundations for selection procedures of employees and as a basis for their creative training programmes.

Now that some of the background to this level and some of its key players have been made known, the associated creativity enhancement ‘technique’ amounts to the telling of specific personality traits which creative individuals are thought to have. These traits can then be ‘sought’.

3.3.2 Identification of Creative Individuals

Stein (1974) and Whitfield (1975) mention many examples of favoured traits of creative individuals. In the main, there is general agreement over their validity. It is suggested that the creative individual is generally widely informed, has wide ranging interests and is versatile. He is also open to feelings and emotions, is aesthetic in his judgment and value orientation but low in economic values. The creative person is observed to possess freer expression of what has been described as feminine interests and lack of masculine aggression; has little interest in interpersonal relationships; is emotionally unstable but capable of using his instability effectively.

Hare (1982, p157), drawing from his work in the industrial field, also relates traits of creativity and concludes that: “...the creative person is essentially a non-conformist with the capacity to pursue nonconforming and creative ideas in the face of societal pressures to see things as others have seen
them and leave things as others have found them.” He is often an achieving person, being motivated by both a need for order and for curiosity. Finally, the creative individual is said to be less critical of himself than uncreative individuals and indeed recognises himself as being creative (von Oech, 1983, p122). Perkins (1981) used some of these ideas in the development of his ‘snowflake’ model, demonstrating his six related, but distinct, psychological traits of a creative person.

If one was to delve a little deeper, there could be cause for concern over the lack of consistency in some of the strands which can be pulled together in the presentation of such a summary of personality traits. On the one hand, Jarvie (1981) believes that being self-critical is essential to creativity while, on the other hand, pioneers of the theory that personality traits have an impact on creative thinking suggest that the creative individual is less critical of themself than uncreative individuals. Weisberg (1986) is optimistic that a theory of creativity is on the horizon; one can only hope it will unify such seemingly incommensurable conceptions.

In addition, it is sometimes considered controversial to speak of ‘creative individuals’ and their traits; similarly, to speak of creativity in relation to children can be thought of as dubious. Resultant theories could be described as slightly impoverished and unreliable, and indeed may be context dependent. Each in their own way seem to cast different insights. A critical theory can incorporate, and usefully employ, such knowledge and insights.

However, even if one put absolute faith in the psychometric approach and managed to select a team of individuals with all the traits for creativity, a creative process or product would not be guaranteed. As we explore the upper three levels, we shall see how various factors, more strongly attributed to the environment of the scene of creative activity, can impact on creative potential.
The interplay between features of the separate levels will become more pronounced; the distinction from one level to another becomes more open to debate and there is a lack of clear cut theories. The taxonomy manages to retain its credibility nonetheless.

I now move to the level of the group.

3.4 Groups

More often than not, a group of people is brought together for the purpose of exciting innovation rather than creativity. The group objectives demand an additional value - an economic value - to the creativity. Hence, much of the literature relates to innovative groups and not creative groups. Even so, I have thought it appropriate to draw from some of those sources for background material for this level.

There can be a synergistic reaction if more than one person is involved in a creative process. The result can be much more than a creative solution. Team building, personal development and the learning of facilitation skills can also be intrinsic to the process. Yet, as with the other levels, the encouragement of creative thinking is still founded on the original definition of a conducive environment. It is the idea of an appropriate environment which I extend a little further here, before concentrating fully on groups and creativity.

3.4.1 Groups and Play

At this level, too, I introduce the work of another major player in the field of psychology - Donald Winnicott. While Winnicott (1971) did not specifically relate his work to organisational problem solving, the results of his observations of children playing may be able to provide important guidelines for the nature and conditions of creative enhancing techniques at the level of the group. I share the use of the metaphor of ‘play’ here since the atmosphere for
‘play’ bears striking resemblance to the environment for creativity described earlier in this chapter.

From his time as a paediatrician, and later as a psychoanalyst, Winnicott reasoned that ‘play’, that is valued play, can help children to understand the complexity of their world. Indeed, dealing with complexity is the aim in problem management. Taking forward this common theme, and the value element which Winnicott has suggested for play and I have emphasised for creativity, leads to the supposition that maybe some of the attributes of play can be usefully transferred to creative problem solving.

If we take a closer look at play, in particular using Martin’s (1991, p34-35) summary of Winnicott’s observations, then there are five reasons why play is considered to be such a remarkable state and not a state to be taken for granted.

1. Play is an intermediate state - “neither practical work for an external purpose, nor purely internal imagination.”
2. The illusion involved in play is not challenged.
3. Play involves a “special state of mind”.
4. Play operates “within certain emotional limits”.
5. “Shared play is a major form of communication”.

These five features of play can be interpreted as precursors to creative problem solving in adult life. To give a couple of examples which relate directly back to the definition in the earlier section - the second feature is akin to an environment which is free from external evaluation. The fourth feature is linked with the appreciation of non-conformity which creative processes necessitate, and the associated security experienced therefore, even when suggesting ‘way out’ ideas. These two examples and the remaining aspects of children’s ‘play’
So, children playing could be an insightful metaphor for a group of adults solving a problem. Unfortunately though, all too often problem solving approaches are applied too methodically and systematically. A new metaphor is then needed; the playful atmosphere is lost to technicalities and creativity is less likely to emerge. An injection of Winnicott’s so-called ‘magical’ element into problem solving approaches is needed; it could be injected into a group through reflection on his findings.

Having presented my selected foundations to the discussion of groups and creativity, I now introduce the thinking behind other contributors’ group creative processes.

3.4.2 Collective Theories for Group Creativity

As stated earlier, there is no one theory for this level. Practitioners concerned with creative group activities tend to draw from ‘traditional’ ideas to substantiate application of creativity techniques. This section brings a collection of these together.

While most practitioners acknowledge the importance of being sensitive to certain characteristics of the group they are operating with, it is surprising to what little depth they are prepared to go. Many comments are purely superficial and do not provide actual guidance for practice. Happily, most recent studies seem to be moving towards a more reflective consideration of group practices; a sustained progression in this direction will ultimately bring methodological guidelines.

In Rickards’ (1985) brief mention of groups he directs attention to Belbin’s (1981) famous team roles and to the forming-storming-norming-
performing cycle that a group tends to follow before it is fully effective. However, he is a little evasive about how these roles should be played out in a creative group and about the possibility of any relationship between the group forming stages and the level of creativity therein. Five years later Rickards (1990) shows much more awareness of group issues. Although not directly mentioning the ‘group’ and speaking from the context of a brainstorming exercise, he raises questions about who should be involved in the meetings and the effect of ‘volunteered’ members. There are other issues which Rickards had come to acknowledge by that time; he is more enquiring of the optimum physical environment and of warm-up sessions for the group. So, in his systems approach, he is admitting that choices have to be made if one is to experience a ‘successful’ creative process, but he is not yet in a critical systems mode.

Rickards is by no means alone when he utilises the group formation process as theoretical grounding for his work with groups. King and Anderson (1990) incorporate it too, but additionally draw from various other management related organisational behaviour arguments. More than a decade earlier Stein’s (1975) case was the same, although more fragmented. He discussed a plethora of notions which included communication patterns, group climate, age of group, leaderless groups, in respect of contributors such as Maier, Torrance and Hoffman. Again, Stein confesses that these factors affect the creativity of a group but goes no further.

Given the title of Hare’s (1982) work one might have expected more on this debate. But, Hare chooses to examine the flow of the group creative problem solving process rather than the group which is partaking of the exercise. I am optimistic that Caird’s (1994) current work into how teams ‘come up’ with innovative ideas and Hohn’s (1996) work on group dynamics will bring some of these loose ends together and provide a sounder practical base.
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So, from this sample of contributors it has emerged that thoughts surrounding group activities are not yet clear enough to provide hints on how to improve our practice. There is heavy reliance on general group theories which have been developed from organisational behaviour studies. The conscious inclusion of critical creativity into a problem solving process may promote more clarity and remove some of the current vagueness. For now, it just remains to present a creativity enhancing technique which is intended to be used within a group.

The number of creativity enhancing techniques which have been usefully employed at this level is vast. Ranging from role playing to manipulative display technique to nominal group technique; the list seems endless. Some of them, one might argue, could be undertaken by an individual. This may be so but I suggest that, in the absence of the synergy generated during a group activity, an individual would not realise full creative potential. It is the technique of brainstorming which I discuss before closing this section. Brainstorming is often used as a generic term for all creative approaches. It is as an autonomous technique that I introduce it here, but the features which make brainstorming a useful tool to enhance group creativity are clearly transferable to other processes.

3.4.3 Brainstorming.

Brainstorming was developed by Osborn (1963). Participants are invited to suggest ideas to solve the given problem, following four basic rules -

1. Criticism is ruled out
2. Free wheeling (building on a previous idea) is welcomed
3. A great quantity of ideas is desirable
4. Combination and improvement of ideas are sought.

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Chapter Four

The basic mechanics of the process involve group members being seated in a semi-circle around a large 'flip chart'. On this chart the facilitator writes down each and every suggestion, without hesitation and without feedback from the rest of the group, that is vocalised by any person. Thus rule 1 is applied. Since every member can see all the contributions, rules 2 and 4 are liable to be implemented. Rule 3 is then adhered to quite naturally.

Brainstorming remains true to creating the kind of atmosphere which I defined at the start of this chapter. In doing so, it is implicitly capable of managing various parameters of the group - the group dynamics are moulded such that everyone feels capable of contributing equally to the wealth of suggestions; the group age and group composition can be altered by changing the invitation list to sessions. So, brainstorming does tackle many of the aspects which people like Rickards and Stein have touched on, assuming good practice is upheld. As we move into discussion of critical creativity, it will be seen how, rather than relying on intuition to improve aspects such as these, there is more solid guidance on offer.

That concludes discussion at the level of the group, and now I move to thinking about how to enhance creativity at the level of the organisation.

3.5 Organisation

Again, theories for organisational creativity are lacking in lucidity. Once more, the emphasis is on the innovative organisation rather than a creative one, but that can probably be taken as read at this level. Furthermore, many of the propounded hypotheses are based on evidence gleaned from observing ‘best practices’. There is little evidence of transforming an uncreative organisation to a creative one, and learning from the experience. Indeed, it is the reverse transformation which Amabile and Conti (1995) have recently documented. Even so, given this background, there are actions that one could take at an
organisational level in order to enhance creativity, and it is those which this section gradually works towards.

3.5.1 Ergonomics of Creativity

This is a grand title poached in part from Flood’s (1995(c)) recent piece of work on reflective practices in organisations; it is the term I assign to the study of the connection between creativity and the prevailing conditions. By ‘conditions’ I mean both the physical and mental state which are being experienced by organisational members. Some people may be able to draw their inspiration for creative problem solving in the most improbable conditions; others from more enviable ones.

Flood (1995(c)), for instance, writes of a South African company director who only has ‘to swivel his office chair and look at Table Mountain for his problems to be solved’. In a similar vein, others may seek inspiration by going for a jog, listening to a piece of music or quietly wandering in the garden. It is perhaps no surprise that management meetings away from the office are being popularised. I have heard of one company which has recently started to invite members to participate in their monthly meeting whilst hiking around the Yorkshire countryside. I am sure we all have our own place - mental or physical - where we go to escape from the pressures of everyday life. We aim to find an environment conducive to creative thinking by seeking appropriate ergonomics of creativity.

When some of the accounts of the spontaneous and unconscious nature of creativity are recalled, one might wonder if the ergonomics of creativity played a larger part than they were originally given credit for. Accounts of the unconscious process which are regularly cited include those of the composer, Mozart, the poet, Coleridge, and the mathematician Poincaré. In the famous account of one of Poincaré’s arithmetic creative breakthroughs, the part played...
by the unconscious is generally emphasised (see for example, Weisberg, 1986 and Gowan, 1992). In essence, Poincaré had been working intensely on a set of mathematical transformations. That was until one particular night when he was very restless and during his sleeplessness he established that he had been incorrect in his original thoughts. Accounts continue that Poincaré then went on vacation to the coast and, while out walking along the cliff tops, he suddenly realised that his set of transformations were identical to those of non-Euclidean geometry. The mathematical intricacies of the finding, for my purpose, are not essential to the story, nor is the accuracy of the finer details of the places where the breakthroughs occurred. My interest lies in whether one could assign the creative impact to the change in surroundings which Poincaré enjoyed. It could have been the adjustments in his ergonomics of reflection which did the trick. This ‘undisciplined’ form of creativity is pursued further in Chapter 5.

It is a collection of favoured ergonomics for creativity within an organisation which I now offer as a creativity enhancing technique for this level.

3.5.2 Specification for a Creative Organisation.

Characteristics of ‘creative’ organisations have been suggested by a variety of authors. Although none of the studies can claim to be conclusive in their findings, given their small samples, there is little disagreement amongst the conclusions. In general it is the culture, structure, size and physical layout which are given attention. From the most recent literature I use the contributions of Perry (1995), Flood (1995(c)), Davis (1991), Ekvall (1991), Walker (1991) and West (1990). Losing the individual identity of the source is a small loss as I bring these contributions together in a compilation of a specification for a creative organisation.
If an organisation is deliberately kept small, with possibly 25 to 30 members, there is often more flexibility and a greater willingness to try new ideas than in a large, bureaucratic counterpart. In the absence of centralisation and formalisation, management employee relationships can be closer and communication can be more reliable. With a strong, visionary leader to head the organisation the members will feel some security in what tends to be a risky, turbulent and complex environment.

Speaking of organisational members: it is important to hire 'good people', (probably in the lower age bracket) but without a fixed recruiting policy. If potential organisation members are 'lunched' and then voted for by current members, there is a shared responsibility in maintaining good group dynamics. Recruits should not expect to be assigned to specific positions, or chase any promotion opportunities. This would be too restricting. There is much more freedom for individuals to face the challenges of their own project, and security from operating in an atmosphere of 'try it - fix it - try it - learn from it'. An additional mentoring system reinforces the empowering philosophy of an organisation which would tend to be prototype driven rather than specification driven.

This last remark suggests that organisational members are given the opportunity to reflect on their work without fear of rebuke. In a task oriented world it is often difficult to justify the time to contemplate and muse on activities - genuine reflection will only occur in an organisational culture where 'taking time out' is respected. In organisations where 'taking time out' is respected, creativity is often held in high esteem. An invitation to a brainstorming session, for instance, is considered to be an honour. In addition to the perceived honour, high levels of trust and of playfulness underpin such activities.
A creative organisation also pays attention to the facilities it provides. Its physical layout will be in keeping with its flexible, highly mobile outlook. There will be a selection of small offices which open out onto a main conference area, light pieces of furniture, book cases on wheels and various portable mediums through which to express ideas. All of these enable the near-spontaneous movement of individuals and resources in response to the calls for assistance from fellow members.

Keeping an eye on this specification in the future may show some changes. A questionnaire recently developed by Amabile and Gryskiewicz (1995) named "KEYS" claims to be a "... tool that helps managers determine the ways in which their organizations foster or inhibit creativity and innovation". It is clearly seeking to contribute at this level. Formulation of KEYS drew on information from an extensive database - 12,500 respondents - and it will be interesting to learn whether prospective survey users continue to reinforce or rebuke current conclusions.

So, this description has given an insight into some of the features of a creative organisation. Finally, I introduce the level of the nation as a sixth level from which I view the stimulation of creativity.

3.6 Nation

Tackling the study of creativity at the level of the nation is a particularly difficult assignment; the immensity of the project is unquestionable. There are a huge number of variables involved. It is therefore not too surprising to encounter a limited amount of work which focuses on this macroscopic level. For similar reasons it is easy to appreciate why much of the literature which, at first sight, seems to emanate from this level often defaults to another. The situation seems to be changing though; at the recent '1996 European Association of Creativity and Innovation Conference', national issues were
being addressed (see Rodriguez, 1996; Constantine and Gugiuman, 1996). When considering national creativity, therefore, it is impossible to quote specific theories as in previous sections. The overview position now adopted in discussion of national culture, reflects the current lack of detail offered from this level.

3.6.1 Anthropological View

I put forward that national culture, with its many diverse and interconnected dimensions, plays a significant role in the development of creativity amongst nationalists. Anthropological views of creativity are therefore important. While identification of proven culture-creativity relationships are sparse, there have been preliminary investigations. Torrance (1965), albeit using a psychometric approach, made significant steps in relating children’s measurement of creative performance to their age, and also considered the influence of teaching practices and environmental factors. One of his major studies, involving participants from as far away as India, Greece and Germany, considered how different cultures evaluated creative characteristics. The assumption being that such an evaluation may inadvertently suppress or promote creativity.

More recently Rodriguez (1996) has explored this theme too, comparing the sanguine, 'manána' approach to creativity of the Latin-American culture with the more disciplined, productivity oriented approach of Anglo-Saxons. Constantine and Gugiuman (1996) also contribute to the discussion from an understanding of how creativity was encouraged in engineering classes in Romania, allowing for the Communist rule in that country. Less dramatic influences might be traced in the Japanese cultural effects on creativity - it could be suggested that the symbols of the alphabet learned so early as children greatly enhance the Japanese ability in image generation.
There has been a suggestion that the deliberate weaving of Eastern philosophy with Western tradition could produce a national culture which stimulates creativity. This is the assumption on which I now build.

3.6.2 West and East Should Meet?

Although Rosenfeld and Servo (1991) direct much of their discussion at the level of the organisation there is great emphasis on national culture in their summary; a reverse of the default mentioned in the introduction. They acknowledge the huge part that it plays on the stimulation of innovation. It could be that no nation has the kind of culture in which creative behaviour will flourish; there may need to be modifications in attitude and habits. Rosenfeld and Servo put forward a case for mixing an American culture with some of the Japanese culture. That is just one recipe.

There is a suggestion that the depersonalised manner in which American industrialists are treated does not naturally allow the release of creativity. According to Rosenfeld and Servo (1991) quick fixes, maximisation of efficiency and avoidance of playing the ‘invisible man’ dominate. In group situations this stance eliminates group think and the ready launch of creative projects, but there is an accompanying reluctance to support the cause for the good of the organisation. This is very much in contrast to the Japanese culture which breeds individuals who forego boosting their own egos and remain devoted to the group and its cause. As Rosenfeld and Servo (1991, p39) put it, “The task, therefore, is to merge the Eastern and Western processes into a new paradigm that will unleash the creative potential and ‘free-up’ innovative activities while focusing on unified goals of the organization.”

3.6.3 Suggestions for Further Work

I recognise that it is not a feasible ‘technique’ for stimulation of creativity to suggest that a nation should somehow change its culture. The
process of change would be very slow and there could be overwhelming resistance. Perhaps one way forward is to perform controlled comparative studies between nations and to build an accurate picture of the effect of cultural dimensions on creativity. There is evidence of collaborative initiatives emerging through the EACI networks but such collaboration needs delicate handling since contributing parties may not share a common objective nor operate from similar bases. A well coordinated programme of research at this level is called for; this is an issue which is now live with the aforementioned Association.

4.0 Summary

The process of typology of literature pertaining to creativity enhancing techniques was described in subsection 2.2. As with many of the other research steps I followed, the typology of literature would have been an anticipated part of other research strategies. However, the specific nature of my chosen research strategy - complementary, creative, systemic for instance - differed from a hard scientific and probably encouraged a more fluid process of development. Within a PAR framework, I was able to recognise that there were numerous taxonomies which could have been pursued. Indeed, several taxonomies were tried and their value to potential subscribers was tested. The resultant taxonomy emerged from an iterative cycle of learning, feedback, reflection and modification as one would expect from PAR.

One of the intentions of this chapter was to introduce a sample of creativity enhancing techniques both as a means of enriching the general discourse surrounding creativity and of demonstrating the diversity of approach which could be employed. My taxonomy has defined a significant number of different levels at which one can operate to enhance creativity. There were many other examples of creativity enhancing techniques which could have been included.
Some of the more recent methods include the use of computer technology. Exploration of the use of software designed for enhancing creativity seemed to be a logical progression of VanGundy’s interest in creative problem solving. He recently provided a comprehensive review of computer aided creativity programs (VanGundy (1992)) although there are probably many more alternatives available four years on. While some individuals might use these programs to good effect, VanGundy (1992, p342) is careful to point out that “... such programs can’t make us more creative, they can enhance our ability to analyze, synthesize, and process problem information.” There are creativity ‘packages’ available too, complete with an audio tape and workpack, from people such as Buzan and de Bono. More futuristic ones may involve subliminal messages using virtual reality and the like. My intention was not to provide a comprehensive list of all known techniques, but purely to demonstrate the need for a taxonomy.

While such diversity could be greeted enthusiastically - there is the opportunity to choose methods for application rather than the necessity to adapt a sole method to serve different purposes - it could present a predicament. Firstly, some interventionists seeking to integrate creativity in their problem solving approach, could be overwhelmed by the variety of methods and unable to make a reasoned choice. What level should they focus on? Secondly, justification for a practitioner’s choice of method may be actively sought as a means of ensuring that its intentions were sound. Schweiker (1994) has pointed towards considering the context of creativity.

There are various other comments I could make with regard to the range of techniques. As we have moved across the spectrum, from the microscopic level of the atom to the macroscopic level of the nation, it is emerging that the factors which are suppressing creativity are proving to be more deep rooted. For instance, organisational factors are probably more firmly established than
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group dynamics. Practitioners of creative approaches would become aware of this, no doubt finding the organisational factors more resistance to change. This may be an indication that higher level creativity enhancing techniques take longer to show a result, but the results may be longer lasting. Again, it is emphasising the call for a critical practice of creativity.

The practice of critical creativity could help overcome these dilemmas. The guidance that critical creativity offers will ensure that the selection of creativity enhancing techniques is undertaken in a systemic, reflective, creative and emancipatory manner; appropriate methods will be chosen for the context of the problem situation, as will be enlarged on in the next Section.
SECTION II

Between truth and lie are images and ideas we imagine and think are real, that paralyze our imagination and our thinking in our efforts to conserve them.

We must continually learn to unlearn much that we have learned, and learn to learn that we have not been taught. Only thus do we and our subject grow.

R.D. Laing, 1972
[Cited in Ackoff, 1978]
CHAPTER 5

1.0 Introduction

By highlighting specific eras, Section I showed how the natures of creativity and of problem solving have been changing. Section I also suggested a method of organising the numerous creativity enhancing techniques which could be practised - a taxonomy based on their level of focus. The current era has been identified in Chapter 3 as one wherein complementarism is an appealing option; it was described as an era which acknowledges the diverse range of creativity enhancing techniques and wide selection of problem solving approaches. This thesis ultimately develops the concept of critical creativity by which to guide the practice of creative problem solving in such a manner that seeks to satisfy this requirement, and others, of the current era. Chapter 5 continues to stress the importance of the introduction of critical creativity but also reassures us that the transition to critical creativity is not such a dramatic leap as it might first seem. I use this chapter as something of a ‘halfway house’ between creativity *per se* and critical creativity.

I have reached a point where I have demonstrated the diversity of techniques and could legitimately go on to reach my destination by now addressing their creative management through the practice of critical creativity. However, I choose to make the trip in two stages and now take a short detour as I acknowledge that there is already some management of creative problem solving approaches. For, whether it be intuitively or consciously, implicitly or explicitly, applications of some creative approaches seem to have taken account of the context in which they are employed. There appears to have been an awareness of, and a response to, creativity’s context dependency. Some critical elements seem to have been acknowledged. This acknowledgement, albeit
elements seem to have been acknowledged. This acknowledgement, albeit somewhat limited, has probably ensured a more ‘successful’ practice of such approaches. Critical creativity takes account of context dependency; it is that issue - highlighting a move towards critical creativity - which I now address.

The issue of context dependency is explored through consideration of three approaches to creative problem solving. All of them are established frameworks wherein creativity is encouraged. A fourth approach, though less formal and encouraging an undisciplined form of creativity, is included for completeness. The sample was selected so as to cover a range of levels of focus, and the promotion of either idea generation or image generation, or both. They were also selected so as to reflect the practice of creativity in profit making organisations and in the voluntary sector. Each framework is presented in the same way.

I start by introducing Ackoff’s Idealized Design (Ackoff, 1978) and then move on to a more recent approach known as Imaginization from Morgan (1993). Manipulative Display Technique (Lunzer and Gibson, 1979) is the third framework selected. An introduction to ‘undisciplined creativity’ rounds off the collection. In each instance I present an overview of the process and then take a closer look at the creativity component. In recounting a case study for each approach, I not only bring discussion more obviously into the practical arena but also support the preceding theoretical presentation. Understandably, there may be issues arising from the case studies which cause concern but these are dealt with in the final section. A comparative review, emphasising context dependency but including other practical considerations, closes the chapter.

So, I start with the process of Idealized Design.
Section II

2.0 Idealized Design

Ackoff’s process of idealized design tackles a problem situation with a very strong prospective, rather than retrospective, orientation. As will be shown, idealized design is founded on two types of thought - holistic thinking and creative thinking. In Chapter 3 I mentioned Ackoff’s understanding of problems in connection with messes and, thus, with systems and systemic thinking - “A mess is a system of external conditions that produces dissatisfaction. It can be conceptualized as a system of problems …… a problem is an ultimate element abstracted from a mess” (Ackoff, 1974, p237). It is his belief that creativity can be defined as “... the ability to identify self-imposed constraints, remove them and explore the consequences of their removal …” (Ackoff, 1986, p105) which supports the partnering component - the creative component.

2.1 Overview

The notion of an ‘idealized design’ was developed by Ackoff and is “an explicit statement of what the designers would have now if they could have whatever they wanted” (Ackoff, 1978, p28). When idealized design envelopes the process of proactive planning or the solving of complex social-system problems, it represents a design or redesign of a system and its environment. A holistic approach is called for; every aspect of the system is considered including inputs, outputs, social and technical issues, its organisation, its management and so on (Ackoff, Finnel and Gharajedaghi, 1984). Such a redesign is undertaken on the basis that the designers are ‘starting from scratch’.

Participants imagine that their organisation has just been destroyed ¹, thus symbolically eliminating any restrictions from an existing structure. Only

¹ Some readers may draw parallels with Business Process Re-engineering or visionary techniques, most of which emerged in the 1980’s eg Parker (1990).
two constraints are consciously imposed - that the design be technologically feasible and operationally viable. There are three primary steps to undertake in the idealized design process (Ackoff and Vergara, 1981). Initially, there is the selection of a mission. Next the desired properties of the design need to be specified; only then can the final step - the detailed design stage - be taken.

Ackoff is keen to emphasise that “the product of an idealized design is not an ideal state or system, but an ideal-seeking state or system” (Ackoff, 1978, p27). A common misconception is that an idealized design is utopia. Ackoff stresses two reasons as to why an idealized design should not be regarded as such. First, an idealized design is capable of being improved. Secondly, the designers “need not pretend to have the final answers to all questions that can be asked about the ideal. Where they do not have an answer, they should design into the state a capability of finding it. Such a design is never completed and is never absolute, final, or fixed. It is subject to continual revision in light of newly acquired information, knowledge, understanding, wisdom, and imagination” (Ackoff, 1978, p27).

Even from this brief overview, it might have become apparent that the process of idealized design calls for no specialist skills from participants. ‘Anyone and everyone’ can take part. By lending itself to such widespread participation there can be mutually beneficial exchanges of knowledge and understanding, and therefore idealized design has the potential of being an exercise of learning and understanding for all. In addition, with its focus on ‘ultimate values’ rather than short term objectives and operational strategies, it is suggested that consensus can readily emerge amongst players.

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2 It might be suggested that there are likely to be inherent constraints which a participant brings to the process in his/her subconscious; then the question of tackling their avoidance, arises. This point is raised again a little later.
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Having presented an overview of the process, I now examine its creativity component in a little more detail.

2.2 Creativity component

It is not necessary to search for the creative element of idealized design for creativity is fundamental to the process. Eight years after its first presentation, Ackoff spells out the link which demonstrates how creativity pervades the whole idealized design process. For, according to him, “To idealize is to think without constraints. To think without constraints is to think creatively” 3 (Ackoff, 1986, p108, original italics). By going on to intimate that idealizing is not to be treated superficially, he reinforces the value of creative thinking. There is recognition that “… creativity is not just a flashing insight. Such insights are nurtured in soil prepared by hard and time-consuming work” (Ackoff, 1986, p120).

Examining the creativity factor a little more closely, and returning to the 1978 presentation, Ackoff says, “The idealized design process unleashes creativity because it relaxes internally imposed constraints. It sanctions imaginative irreverence for things as they are and encourages exploration of areas previously precluded by self-imposed and culturally imposed taboos.” Feasibility of the design is downplayed aiming to release “… its participants from even unconsciously self-imposed constraints” (Ackoff and Vergara, 1981, p7). Reviewing my earlier statements describing creativity in organisational settings and characterising an environment conducive to creativity (Chapter 4), it would seem that idealized design satisfies all three aspects. While there is no guarantee of a creative redesign resulting solely from pedantic commitment to the steps of the process, (since facilitation style, group dynamics of the

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3 I remind us of the concerns expressed in footnote 2. Ackoff would probably respond by saying he is in fact attempting to avoid the subconscious constraints. It could be, however, that we in fact need a balance between the inherent and self-imposed constraints.
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system's stakeholders and other factors could have an impact on the process, as will be discussed when critical creativity is fully introduced) there is an explicit removal of assumptions and constraints 4. Thus, there is the prospect of a creative process in which radical and unconventional ideas can flow. 'Quantum leaps' can be made.

Having considered the creativity component of the process, an example of an application of idealized design will illustrate the creative potential of the approach.

2.3 Case study

Since the process of idealized design is fundamental to Interact's 5 work, there are many accounts of its application. A recent example involves an idealized design of the USA healthcare system (Rovin et al., 1994) 6. Adhering to the principle that the redesign is to be systemic, the consortium's approach became one of redesigning the whole system so as to eliminate all the problems rather than tackling the problems in a piecemeal ad hoc manner. To achieve this, the consortium imagined that the current healthcare system had been destroyed overnight; apart from acknowledging that the overall context was intact, it was a 'fresh start'. There was no intention to simply repair the present system. A redesigned system was the target, constructed with no imposed constraints and which could be implemented.

The step of 'selecting the mission' saw the consortium take a quantum leap. Stepping out of the traditional view of the healthcare system as a system to provide treatment for illnesses and disabilities, the consortium assumed the

4 Of course, there is an assumption that we are sure the list of assumptions and constraints is finite.
5 Interact, Institute for Interactive Management, Bala Cynwyd, Pennsylvania, USA, is an organisation where Ackoff, and other Idealized Design practitioners, operate.
6 An abridged version also appears in Ragsdell (1996a).
rather novel perspective that the healthcare system's purpose was to maintain a state of patient well-being. A creative flip in thought was therefore achieved. It seemed radical at the time but common sense after a little thinking.

I now move on to explore Morgan's process of imaginization in a similar manner.

3.0 Imaginization

Morgan has recognised that organisations have changed; that they are 'not what they used to be'. The traditional view of organisations as stable, regular arrangements no longer suffices in current times when adaptability and flexibility are called for. As he says, we are "... moving into an era where the ability to understand, facilitate, and encourage processes of self-organization will become a key competence" (Morgan, 1993, p v). Imaginization aims to develop alternative ways of thinking about organisations so that replacement management styles and organisational structures can be introduced. Morgan offers the process of imaginization as a key managerial tool to assist managers in their bid to face the challenges of such an era; to overcome the 'old way' of thinking so that "... new styles of organization and management" can be introduced (Morgan, 1993, p vi).

3.1 Overview

Some ten years ago, Morgan (1986) was writing of organisations as though they were such things as psychic prisons, organisms and machines. He, along with various others recently recalled by Oswick and Grant (1996), (Lewin, 1951; Burns and Stalker, 1961; Tsoukas, 1993; for example), have

Imaginization is also part of Morgan's problem solving approach known as 'Finding Your 15%', which seeks to make incremental changes. This approach encourages organisational members to identify the 15% of organisational life which is within their control, and to exert their efforts trying to bring improvement to that percentage, rather than tackling the remaining 85% over which they are said to have no control.
employed a range of metaphors in their explorations of organisations. Metaphors can create compact descriptions of the complex life therein. While employment of metaphors for developing plausible explanations of organisational behaviour continues to be a valuable managerial skill, Morgan has moved ahead of most of the rest of the field. Through his process of imaginization Morgan now uses metaphors as a vehicle for organisational change interventions. Relying on rich metaphorical descriptions, imaginization aims to help problem managers reframe their problems and to look forward to experiencing new insights. Imaginization aims to develop alternative ways of thinking about organisations so that alternative management styles and organisational structures can be introduced. His belief is that it is not productive to try "... new styles of organization and management while continuing to think in old ways" (Morgan, 1993, p vi).

Chapter 4 introduced creativity enhancing techniques and dealt mainly with methods; in this chapter we have advanced to exploring methodologies. As with other methodologies, it is unfair to reduce the sample of creative problem solving approaches to a simple series of steps. Morgan (1993, p18) himself says, imaginization "... cannot be reduced to a simple recipe for that would regiment and destroy the variety on which it thrives. .... It's more of a mind-set and a capacity than a technique." However, a pedagogical tool has an important role in the introductory stages even though, in practice, the process of internalisation takes over and the paper-based method disappears. So, bearing this in mind, a set of guidelines might include the following points.

In essence, imaginization is a hermeneutic process which plays on the relationship between language and reality in our ability to interpret social constructs. It is built from an environment which is safe and constructive; that is, one which mirrors some of the characteristics identified in an environment
which is conducive to creativity (Chapter 4). In such an atmosphere participants are invited to explore their organisation, or a more specific problematic situation, by sharing metaphorical descriptions. Several metaphors may be offered which will progress the understanding of the chosen situation. However, it is often the case that one particular metaphor will ‘resonate’ with the whole group; this one will allow the participants to gain the most insight and bring the richest and most meaningful change proposals.

Of course facilitators could determine, rather than promote, the metaphor with which a group should work but such action could result in the loss of many benefits. Experimenting with their own metaphors encourages participants to find and create meaning, and often leads to stronger ownership of both the metaphors and any subsequent implementation of strategies for change. In addition, facilitators who do force the use of a metaphor, do not face the “core challenge of imaginization” - that of personal empowerment (Morgan, 1993, p293).

Having presented an overview of the process, I now look more closely at the concept of metaphor.

3.2 Creativity Component

The creativity component of the imaginization process stems from the explicit use of metaphors. Using a metaphor is an “application of name or descriptive term or phrase to an object or action to which it is imaginatively but not literally applicable” (Concise Oxford Dictionary, 7th Ed.). Metaphors are used to “... find new ways of seeing, understanding, and shaping their [ie the managers’] actions” (Morgan, 1993, xxv).*  

* It is interesting to note that not only can the strategy of action research be traced back to Lewin (see Chapter 2), but that some authors would claim he was also the pioneer of framing his work in metaphorical terms (Oswick and Grant, 1996).
In order to widen the discussion slightly, I first discuss the application of metaphors in general. Then I discuss them within the framework of imaginization.

3.2.1 Metaphors

The application of metaphors as a means of communicating a richer description than would otherwise be possible has been noted since the middle of the century. The profile of metaphors, particularly in organisational analysis and development, has risen ever since. Given Barrett and Cooperrider's (1990) four point summary of the potential of metaphors, this rise is not too surprising.

1. Metaphor is an invitation to see the world anew.
2. Metaphor facilitates the learning of new knowledge.
3. Metaphor provides a steering function for future action and perceptions.
4. Metaphor invites active experimentation in areas of rigidity and helps others overcome self-defeating defenses.

Today, metaphors have a prominent position in the literature and, as seen by the following recent references, much thought is given to their application.

Merali and Martin (1994) have usefully employed metaphors and convey quite an optimistic view. They incorporated metaphors in the teaching of information systems. Much was learned from the experience. Their concern is that metaphors have limitations in five areas when used explicitly to drive the teaching and learning activity - reification, distraction, distortion, manipulation and disfunctionality. However, they are able to give useful advice on the choice of metaphor: "The power of metaphor in communication is totally dependent on the existence of a shared semantic view of the reference object / concept (ie the
original named object / concept in Aristotle’s definition). So the metaphor must be chosen to be culturally and linguistically appropriate for the context within which it is being used.” (Merali and Martin, 1994, p16)

As I continue to stress throughout this thesis, creative approaches cannot be applied on an ad hoc basis and guarantee a high rate of ‘success’. There are many issues to consider in their practice. Yeoman and Peters (1994) encountered difficulties in their use of metaphors and err heavily on the side of caution when they comment that: “.. the technique is not universally applicable. Its success appears to be dependent upon the group’s acceptance of the process, the relevance of the metaphor and a common objective determined prior to entering the process, preventing ‘Hidden Agendas’ emerging. Participants perceived metaphors to be very subjective and unreliable.” However, an explanation of their experience may be found in the wider context - for instance, in the corporate culture.

From a contrasting standpoint, metaphors have been employed in the analysis of education. Taylor’s (1984) collection entitled “Metaphors of Education” provides eight papers originating from philosophers, historians and administrators as well as specialists in subjects such as English literature and the curriculum. As Taylor’s (1984, p3) introduction says: “Although these authors’ approaches to the theme of metaphor in talk and writing about education are as diverse as their disciplinary specialisms, they concur in acknowledging the importance of recognizing, understanding and assessing the part that metaphor plays in organizing and enriching discourse about education, and in recognizing the dangers of unexamined and uncritical metaphoric usage.”

The above individuals used metaphors outside of Morgan’s framework. I now return to making reference to imaginization.
3.2.2 Metaphors and Imaginization

Though the process constrains participants into the use of a particular medium for expression, there are no constraints for the details of that medium. As was suggested earlier, the choice of metaphor for a particular situation is by no means prescriptive. An 'appropriate' metaphor may unexpectedly resonate with participants and novel elucidations then abound as the process unfolds. However, thinking back again to the expressions for creativity and conditions for a creativity inducing environment, imaginization could be suspected of hindering the creative process by encouraging the use of only the metaphor.

There are those who express concern that the participative nature of imaginization could also constrain the creative component. Keizer and Post (1996, p102) write “The participative approach implies divergence in metaphor creation. Special attention is needed to integrate from individual ‘imaginization’ to a collective metaphor.” There were no suggestions as to how to overcome this potential danger; maybe it is not necessary to overcome such tension but to let it contribute to the creative process. After all, Follett (1924) and Freud (1970) identify such conflict as a source of creativity. So, the interplay between divergence and convergence is important; critical creativity will help in its management.

I have raised a couple of issues which may constrain the creative component of imaginization. Nevertheless, if a group of people feel especially at ease with a particular metaphor and is allowed the scope to explore the ideas which spring from its acceptance, then the level and impact of the new understanding is limited only by their imagination.

3.3 Case Study

Several accounts of the use of imaginization appear in Morgan's main
text (Morgan, 1993). The intention of the process is to encourage inclusion of any metaphor. However, a number of metaphors seem to have been used on more than one occasion with resounding benefits for the participants. These include the strategic termite, the spider plant and the game of political football. Care has to be taken however not to slip into regular use of a small number of metaphor because this ironically constrains creative thinking in the medium and longer term.

Taking the example of the spider plant, it has been used "as a way of rethinking organizational design and managerial styles to promote flexible, decentralized modes of operation" (Morgan, 1993, p63). Metaphors may inspire different trains of thought for different groups of individuals. This is the nature of the process. While one group may feel comfortable concentrating on the relationship between its organisation and the physical characteristics of the spider plant (young and green in parts but with some withered leaves, for instance), another group may emphasise the umbilical cord and offshoots of the plant as a means of creating an opportunity for discussion of decentralisation of the organisation. In each case, the use of the metaphor releases the mind of some of its inhibitions, forming an escape route from habitual dialogue and inciting exploration of otherwise neglected areas.

That concludes discussion of imaginization for the moment. Manipulative Display Technique is now introduced.

4.0 Manipulative Display Technique

Communication can be thought of as being capable of fulfilling three functions - an informational function, an interpersonal function and a causative function. That is, to pass on a narrative, to assume or adjust relations between those involved and to initiate an action. Manipulative Display Technique (MDT)
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is rooted in an acknowledgement that communication between individuals and within groups is fundamental to the process of decision making. With the obvious links between making decisions and tackling problems, MDT therefore also acknowledges that communication is intrinsic to the activities associated with problem solving. Drawing on experience from schools, community groups and industry, Lunzer and Gibson (1979, p2) write that their approach arises from "... a need for a common language which will enable people with varying command of words to show each other what they mean, to establish a working relationship, to reach decisions and to concert action".

MDT is not as accessible in the literature as some of the approaches mentioned already; it does not appear to be employed, or exploited, on a commercial basis. Indeed, my own introduction to this approach came via a Training and Development Unit whose work is predominantly with community and church groups. Nevertheless, MDT raises equally pertinent issues for this thesis. Even though it conveys genuine modesty about its creative intent, in many respects MDT is a sophisticated hybrid of brainstorming (Osborn, 1963) and nominal group technique (Delbecq, Van de Ven and Gustafson, 1975). It is as a framework for promoting creative problem solving that I discuss MDT here.

4.1 Overview

When a group of people has come together to improve a shared problem situation, it is quite common for the individuals to represent differing viewpoints. Schein (1987), while not a direct influence on the development of MDT, provides a relevant and wider discussion of such a scenario. He speaks of "intrapsychic processes" and presents a well-explored model which contributes to the wider discussion of group processes. Independently, Lunzer and Gibson (1979) have recognised that as the problem solving process gets
underway, it is not unusual for the presence of differing viewpoints to hinder, or even halt, proceedings. For instance, there might be an aggressive confrontation between two of the party which is brought on by each other's inability to grasp how things seem from the other's point of view. Unfortunately, the effect for the rest of the group is generally to heighten their own feelings, rather than to clarify the issue under dispute.

Looking at this aspect from a slightly wider perspective, there is concern that the group dynamics - the interactions in the group and the group's behaviour - can significantly influence its performance. The interpersonal and causative functions of communication may not be operating effectively within the group. More specifically, this state of affairs may suppress the creative potential of the problem solving process. MDT attempts to circumvent any breakdowns in communication; in doing so it implicitly aims to avoid the suppression of creative thinking. MDT creates an atmosphere which is more conducive to creativity than is naturally experienced by groups. I describe the way in which MDT does this in the case study; first, I explain the process as a whole.

The process of MDT involves the displaying and selecting of cards on which a proposal for bringing improvement to the situation is written. Proceedings begin with everyone viewing a set of cards which has been laid out on a table; on each card the facilitator has printed a core suggestion. Without any formality and with no prerequisite to seek any level of approval, participants pick out, and remove from the display, all the proposals that they fully approve of. A first group decision has thus been made - the cards remaining on the table are the suggestions which nobody considers worth pursuing. The cards which have been removed from the display in this first cycle are then laid out again for all to see. This time the individuals turn face
down on the table those suggestions with which they absolutely disagree. Another group decision has been undertaken since the cards which remain upturned hold the suggestions which are agreed to be feasible by all those participating. Up to this stage the rejection or acceptance of suggestions has been by manual means rather than verbal.

The next cycle concentrates on those cards which were turned face down as a sign of disagreement. It is significant to remember that this disagreement might have been expressed by as few as one person. From this point it is likely that the creative potential of the group is realised. On splitting into small working parties which concentrate on a handful of cards there is discussion in a relaxed atmosphere; there might be some clarification sought but it will generally be followed by a seizing of the opportunity to either accept, modify or completely transform the original suggestion. Once each working party is happy with its new suggestions the cards are rewritten and presented to the rest of the group for general discussion and a vote. A final decision has then been reached and the action can be implemented.

Having presented an overview of one cycle of the process of MDT, the creativity components of the process can now be described. I emphasise two components: firstly, that of the overriding environment created by MDT and secondly, the way in which it attempts to generate ideas.

4.2 Creativity Component

While all effective creativity enhancing models and methods endeavour to create an atmosphere conducive to creative thinking, MDT is immensely conscious of the benefits of achieving a secure environment in which to proceed. With direct reference to problem solving, Lunzer and Gibson (1979, p 21-22) have identified changes in group behaviour when exposed to changes in
environment. The component which tackles this aspect is the first one I share.

In a safe environment individuals will probably surface various approaches to the problem, examine their implications and then modify or discard the approaches, as thought appropriate. There is a tendency to experiment with alternative ways of proceeding. Conversely, when an environment is perceived as hostile and lacking in mutual trust, individuals will tend to restrict themselves to well-tried solutions. There are immediate inbuilt constraints. Participants seem to lose a degree of flexibility and openmindedness in their thinking; a tendency to reinforce a personal viewpoint and defend their own proposals, sometimes even ignoring rationale, prevails. As I have intimated in Chapter 4, this second environment does not often lend itself to the reception of novel suggestions and insightful explorations as anticipated in creative problem solving.

The process of MDT tries to create a safe environment by ensuring that participants never feel challenged at a personal level. Only the proposals for change are to be challenged. So, participants are encouraged to both mentally and physically focus only on the issues of the problem situation. There is some security gleaned from detaching the problem from oneself, increasing the possibility of sharing proposals more openly. The continuous displaying of the cards keeps the suggestions for improvement fully in view - a permanent reminder of the purpose of the exercise. Any temptation to deviate from the purpose and drift into a questioning of another's understanding or knowledge of the matter in hand is thus left low on the agenda. In this way, individuals avoid 'eye to eye' contacts; any resultant confrontation which would inhibit a participant is brushed to one side. So an environment, albeit temporarily, which enhances group performance and simultaneously evokes creative thinking is set up.
To look at a more specific creativity component of MDT, I look at the way in which idea generation is handled. Sometimes creative ideas come from ‘out of the blue’ and sometimes they come from ‘hitchhiking’ on other ideas. It is this latter origination that MDT exploits. By starting with core suggestions and then by continuing to display the cards, as mentioned in the overview, participants retain the opportunity to be inspired by ideas already put forward. They can build from what is already given or deliberately take an opposing viewpoint in their search for suggestions. Either way, the starting point is not from zero. Participants could be thought of as being given a ‘head start’. There is no expectation for ideas to spontaneously emerge and no pressure for it to happen; the process does not collapse because no-one offers an imaginative proposal.

Having discussed the creativity components of MDT I now present an example of its practical application.

4.3 Case Study

As we move into the practical arena it becomes apparent that MDT is essentially a generic term for a set of approaches which tries to create a safe atmosphere for decision making and problem solving. Tailor made presentation packs have been developed for particular scenarios - housing association meetings, neighbourhood committees and classroom interactions, for instance - which provide a different set of starting cards. However, the principles remain unchanged.

As mentioned earlier, MDT is not widely publicised. Its application is similarly not well recorded. However, I have been able to select an application by Lunzer and Gibson themselves, which involved a housing co-operative. While little detail of the activity was originally shared, the following account
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gives the flavour of the process.

A housing co-operative committee needed to work out a set of rules by which they would all operate. In spite of endless discussions the members had not been able to reach a set of rules which they all understood and were happy to accept. So they turned to the process of MDT to guide them. Their first display of cards represented a variety of issues - noise, pets, lodgers and so on. For each issue there were three different coloured cards: a red card showed a prohibitive rule, a yellow card showed a restrictive rule and a green one represented a permissive rule. There were also plenty of blank cards on which participants could write additional rules and display alongside those already on the table; these could be a new version of a rule or a new rule altogether.

The next step saw participants pick out cards which displayed rules of which they approved. There was no waiting for turns, everyone just dived in. The cards left on the table were those which then could be discarded since no-one had approved of them. The cards which had been picked up were laid out again. Next, cards which any member disagreed with were turned upside down. This meant that all those cards which were face up had been unanimously agreed upon. They too could be removed and their content recorded in the official rule book. The remaining cards could then be shared out amongst smaller parties which would then set to work on the final stage. No verbal communication had been undertaken until this point and the purpose of the exercise had been held, metaphorically and literally, in view.

Now, in intimate discussion groups it was possible to concentrate on the key issues of the remaining cards. As verbal exchanges flowed issues were made clearer and new understanding gained; many more new cards were written and added to the pile. It only remained for each working party to share their
Having introduced MDT I have come to the end of my selection of three creative problem solving frameworks. It is perhaps a timely opportunity at which to remind ourselves that, while these frameworks can be operated beneficially in a stand alone capacity, they need not be applied as such. Practitioners often have a tendency of treating these and other frameworks in isolation. In actual fact, their application can be enhanced by incorporating creativity enhancing techniques within the process; critically incorporating them, of course, as will be defined in the next chapter.

It is probably also a timely moment to move on to remind ourselves of the value of an undisciplined form of creativity; in doing so we slightly redress the balance of the previous three sections.

5.0 Undisciplined Creativity

Frameworks which consciously try to evoke creative thinking are capable of doing just that, as has been shown in the previous sections. However, I do not mean to imply that a formalised approach is essential for creative problem solving or that a disciplined form of creativity is in any way superior. Undisciplined creativity can bring forth equally creative solutions to problems and warrants similar recognition. Given the unstructured and unpredictable nature of undisciplined creativity, it is clearly impossible to organise discussion in the same way as for the previous three frameworks. Nevertheless, I do not wish to forget its mystical origination amidst the emphasis on predetermined frameworks; undisciplined creativity has an equally important role in the practice of critical creativity.
There must be numerous examples of instances when creativity has originated in the most seemingly unusual circumstances. No doubt we all have personal examples to tell. We may have awakened with a creative solution to a problem which has been ‘bugging’ us for a long time. There is no logical reasoning as to why it should have crossed our mind at that moment in time. Aside from the possible perpetual subconscious ‘chewing over’ of the problem, there are no clues as to where the solution came from. Nevertheless, the solution has been valued and implemented. Few of us dwell long on discovering the source. The ‘famous’ ones - Coleridge, Kekulé, and Poincaré - with the ‘bed, bath and bus’ link are regularly told.

The example of Poincaré has already been related in Chapter 4 to emphasise the importance of the ‘ergonomics of reflection’. I now share the tales of Kekulé and Coleridge as examples of undisciplined creativity. While the self-reporting style of these incidents makes them of dubious reliability, the tales continue to be fascinating and bring another dimension to creativity.

Kekulé’s reported the discovery of the benzene ring structure in the following anecdote (cited in Weisberg, 1993, p106 amongst other sources). “I turned my chair to the fire [after having worked on the problem for some time] and dozed. Again the atoms were gamboling before my eyes. This time the smaller groups kept modestly to the background. My mental eye, rendered more acute by repeated vision of this kind, could now distinguish larger structures, of manifold conformation; long rows, sometimes more closely fitted together; all twining and twisting in snakelike motion. But look! What was that? One of the snakes had seized hold of its own tail. and the form whirled mockingly before my eyes. As if by a flash of lightning I awoke ... Let us learn to dream, gentlemen.”
In a similar style to Kekulé's self-report Coleridge wrote of the creation of the poem `Kubla Khan' in the following way. Again, Weisberg (1993, p43) has been used as a typical secondary source. "Coleridge continued for about three hours in a profound sleep, at least of the external sense, during which time he had the most vivid confidence that he could not have composed less than from two to three hundred lines; if that indeed can be called composition in which all the images rose up before him as things, with a parallel production of the concurrent expressions, without any sensation or consciousness of effort. On awakening he appeared to himself to have a distinct recollection of the whole, and taking his pen, ink, and paper, instantly and eagerly wrote down the lines that are here preserved."

These tales have sometimes been related to visual imagery and unconsciousness. Equally they been related to the genius myth of creativity. Evidence of a general shift away from this myth was highlighted in Chapter 3. In recent years Weisberg (1993) has shifted even more persuasively and has taken these examples, and more, into a much wider perspective. This is not unlike my approach in Chapter 4 where, as I have admitted, I tried to connect the ergonomics of reflection with the aforementioned 'famous' accounts of creativity. However, I realise that an acceptance of an undisciplined form of creativity - be it associated with a genius myth, a romantic view, or some other belief - is not to be dismissed. There would appear to be a source of creativity which we cannot knowingly reproduce and it cannot be ignored, even when the issue being explored is that of context dependency.

6.0 Comparison of Approaches

Previous chapters have led us to appreciate that creativity is context dependent. I now close this chapter by considering the contexts in which the aforementioned creative problem solving approaches have proved successful in
order to develop a comparative review. I have structured discussion around exploration of the outputs of each example and the anticipated size of the creative leap which will be experienced. There is also an introduction to a few essential facilitation skills. This structure is not intended to be an absolute categorisation but is judged to be a useful framework in this instance.

6.1 Idea or Image Generation?

A useful way to distinguish between creative processes is to question their intentions and purposes. More specifically, to ask whether they intend to generate ideas or generate images. In a similar way that some people associate more readily with text than with diagrams, individuals often find that they have a preference for ideas or images as a medium for expressing their creativity. So, in the application of creative approaches we perhaps could be sensitive towards this preference.

I now look at the three frameworks in terms of their intentions. While imaginization’s clear intention is to provoke the development of images and MDT aims to generate ideas, it is perhaps not quite so obvious which category of process idealized design falls into. Indeed, it is probably best to think of idealized design as being founded on the interplay between both intentions; the method does not restrict to either idea or image generation. The tension created by the interplay may well bring added value to the creative potential of the process.

So, a first example of a contextual factor has been identified. One would now need to ask whether the application of imaginization, for instance, was effective because the participants felt comfortable with the generation of images or whether they were taken out of their usual idea generating mindset. But that is moving too far ahead and into the realms of the practice of critical creativity.
Another useful avenue to explore is the anticipated creative potential from application of these approaches. Creative solutions sometimes emerge in an incremental style, sometimes they completely rock the status quo.

Idealized design has been known to involve senior players from organisations - people who have the power and authority to make radical changes. It has also been applied at the request of companies which have been willing and able to take risks - either to stay ahead of their competitors or to ensure their survival. In these circumstances there are few, if any, restrictions to the exercise of imagination. However, as variations of the original idealized design have been developed (for example, Ciccantelli and Magidson's (1993) customer-oriented version) the process is being more universally practised with stakeholders coming from different levels of the organisation. Even so, idealized design would seem to anticipate quantum leaps in creativity.

Like idealized design, successful MDT and imaginization processes are able to accommodate a wide variety of participants, but it should be remembered that neither of them are openly aiming for the massive changes seen in idealized designs. MDT gives participants a 'leg up' the creativity ladder; MDT does not start with a blank canvas. There is also an expectancy from MDT that there will be modification to suggestions already put forward, although outrageous ideas would not be ignored. It could therefore be a useful approach to use with groups which are a little apprehensive about being radical; groups which are timid of 'putting their heads above the parapet' so to speak.

Imaginization is slightly deceiving in its intentions. On the one hand it appears to be aiming for incremental changes since the process restricts participants to just one mode of expression - the metaphor. Such a restriction
may constrain creative thinking for some people and, as a result, only small creative steps may be taken. On the other hand, the metaphor attempts to capture a whole situation in an image. So, there is the possibility of whole changes.

For some members of an organisation there is comfort in the knowledge that change will occur incrementally. Therefore, MDT and imaginization are probably more appealing to organisations that are more at ease with less radical changes than those who would eagerly participate in an idealized design exercise. They may be attractive to individuals who operate within a restricted boundary of influence. Indeed, application of MDT has been predominantly in community groups and voluntary sector organisations where organisational behaviour is often less aggressive than in profit-making scenarios.

Another feature of the context of operation of these frameworks has thus been defined.

6.3 Facilitation

Finally, I look at the facilitation of the three approaches. Facilitation of a creative process is a huge responsibility. The success of the process may even be thought to rest in the hands of the facilitator. Inappropriate facilitation can result in a lack of commitment from participants, maybe even in resentment towards the project and its leader. Alternatively, appropriate facilitation can dramatically improve the chances of an enjoyable and profitable activity. Facilitation is a massive issue in its own right and I acknowledge that I am only ‘scratching the surface’ here.

As mentioned in the previous section, idealized design is undertaken by

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* In fact, this is the philosophy on which Morgan bases his recently developed problem solving approach known as ‘Finding Your 15%’. [See footnote 7, p118]
stakeholders with varying levels of responsibility in the organisation. The result may be that some participants of IDE feel threatened by their treatment as an equal player or, contrarily, be overwhelmed by their assumed capability to partake in such drastic change programs. There is an obvious need for the facilitator to show a critical awareness of participants. In addition, while appreciating that each method of introduction and subsequent engagement in this process will vary according to the skills of the facilitator, it is apparent that every facilitator of idealized design must themselves be creative. Not only can a creative facilitator contribute their own design ideas but their speedy acknowledgement of creative suggestions can greatly enhance the process.

As with idealized design, much of the success of imaginization depends on its facilitation - creating an atmosphere in which all participants feel at ease and are able to contribute, and also being able to recognise when a metaphor is starting to resonate and is 'ready to run'. A facilitator must be able to harness the metaphor yet also allow it to be pushed to its full scope. However, in contrast to the aforementioned approach, not only is there absence of the explicit removal of assumptions before proceeding into creative thinking, but there is also directing of participants into a particular mode of expression. Some would not interpret this as a problem. The title of Lackoff and Johnson's 1980 text "Metaphors We Live By" spells out their argument that metaphors are a natural part of our everyday life. Others have taken a different view. Keizer and Post (1996, p102) stress that "the use of metaphors requires some conceptual intelligence and social skills. Not every person will be able to contribute or participate in the process of 'imaginization'". If one assumes that the metaphor is not a universally acceptable means of expressing creativity then an extra demand arises for the facilitator. A facilitator must not only be creative, but must be sufficiently skilled to promote appreciation of the potential benefits of using metaphors, before the process of imaginization can begin.
Facilitation of MDT, once again, stresses the ability to conjure up an atmosphere conducive to creative thinking but in contrast to the other two approaches, MDT probably demands fewer skills for dealing with unequal distribution of power in the group. The process itself attempts to limit oppression of members by those who are more articulate and able to verbally express their views more strongly.

The facilitation style of the creative process is a third example of a contextual factor which needs to be accounted for when practising such frameworks. There are undoubtedly many more which critical creativity will be required to tackle.

7.0 Summary

Continuation of the literature review has uncovered examples of creative problem solving approaches whose development process seems to have incorporated a reflective element which considered the contexts in which they are applied. With the open mind necessary for effective PAR I am able to acknowledge that such approaches are demonstrating some of the characteristics of the notion of critical creativity.

It has been mentioned that idealized design is aiming for quantum leaps, for massive change. The removal of all barriers to creativity allows radical suggestions to come forward. Imaginization is predominantly aiming for incremental changes. The creativity component of this process is somewhat restrained in comparison; dampening of creativity may occur as assumptions are subconsciously brought to the forum or as a single mode of expression is offered. But, again, the process would seem to be appropriate for its aims. In the same vein, MDT was shown to provide a process in which unequal distributions of power did not hinder the creative process.
While the previous approaches have considered the context in which they are most successfully practised, their application cannot be ‘policing’. Some interventionists may try an ‘incompatible’ match between approach and situation by not considering the context of the intervention. The match could be perceived as incompatible by any of the parties directly involved or, indeed, by any observers. An inappropriate incitement of creativity from a problem manager could hinder the whole problem solving process, as indeed could an inappropriate facilitation style. Creativity should be practised in a critical manner.

In Chapter 6, I fully introduce the concept of critical creativity. I go on to show that the framework of Total Systems Intervention (TSI) promotes a process of thought which can guide practitioners in their choice of creativity enhancing methods so that an appropriate choice is made for the context of the intervention. Thus, TSI is shown to encourage the practice of ‘critical creativity’.
CHAPTER 6

1.0 Introduction

The previous chapter examined three formal problem solving frameworks; all three utilise creativity. Having explored each creativity component, a comparative review indicated that an appreciation of the context dependency of each framework had been taken into account in order to ensure their ‘successful’ application. I acknowledged such appreciation to be a movement towards the practice of critical creativity. From that ‘half way house’ position, I am now ready to fully introduce the concept of critical creativity and discuss its operationalisation.

Chapter 6 begins by preparing a launch pad. With an emphasis on consolidation, several strands from previous chapters are brought together as a reminder of the need for critical creativity in this creative problem solving era. Critical creativity is then launched and explored from various frames of reference. First, the philosophical foundations of critical creativity are shared. Next, its nature is revealed and finally the underpinning principles are defined.

The second part of this chapter introduces Total Systems Intervention (TSI) (Flood and Jackson, 1991(a); Flood, 1995(a) & (b)) and impresses on us the common ground it shares with critical creativity. TSI is a systems based problem solving framework which I have recognised as a framework which is capable of providing guidance in the pursuit of critical creativity. Chapter 6 then goes on to discuss the operationalisation of critical creativity through the various phases and Modes of TSI. Inclusion of a ‘fictitious but based on fact’ case study attempts to clarify the process of operation, in preparation for a critique of its ‘real life’ application in Section III.
So, Chapter 6 moves through the philosophy, principles, process and practice of critical creativity in a similar way to Ragsdell, (1995(c), (d)). First then the launching of critical creativity.

2.0 Critical Creativity

2.1 Introduction

As we have seen, creativity is a very broad topic, open to many interpretations. It is not sufficient to talk of 'creativity' per se. For instance, when referring to creativity in relation to organisational problem solving approaches, the interpretation must be more precisely directed. Interpretation must be based on reflection in the context of the intervention, as suggested in the previous chapter. Such creativity must be compatible with organisational characteristics at the time of an intervention, yet retain the ability to challenge and affect such features. The creative process must be reflective and locally sensitive to the context. Creativity must be critical.

By attempting to guide the creative process in a critical manner, one might suggest that the creativity therein loses any chance of including elements of spontaneity. Being critical and being creative could be interpreted as two extremes - opposite ends of a spectrum. However, it has been mentioned in earlier chapters that there is a value judgment associated with creativity. Critical creativity asks for value judgments to be an integral part of the process. Explicit introduction of critical creativity into the process of problem solving, using the most recent meta-methodology of TSI in particular, would ensure that any creative element was valued in situ. The current version of TSI focuses on local decision making and is therefore able to take account of the value system of its participants.

2.2. Philosophical Foundations of Critical Creativity

I now look more closely at the philosophical foundations of 'critical
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creativity'. It could be said that 'creativity' is a cognitive process which can result in a product; the product and/or process being original and valuable to the parties concerned. From the philosophy of Critical Systems Thinking, an understanding of the term 'critical' can be carried forward (Flood and Jackson, 1991(b)). Being 'critical' involves encouraging complementarism, sociological awareness, human well-being and emancipation. The interpretation of each of these commitments in respect of creativity is now considered.

2.2.1 Complementarism

The complementarist standpoint could be displayed in several ways. First of all, complementarism could be seen in an appreciation that creativity can arise from a number of different origins. Indeed, from the chronological review of changes in the understanding of creativity and from the taxonomy of purpose of creativity enhancing techniques, many origins have already been identified. A complementarist standpoint will acknowledge these different origins - of conflict and natural personal qualities, for instance - but will not assume that any particular source is superior.

A complementarist perspective might also have been seen from an awareness that varying approaches to creativity can yield different outcomes and outputs. Idea generation and image generation techniques have already been mentioned. So, outputs might range from a metaphor to a design of a system or maybe a written list of attributes. But, of course, outcomes and outputs need not always be tangible. Intangible outcomes could include an increase in confidence of the participants or accelerated team development.

Another display of complementarism could be in an acknowledgement that particular methods and techniques \(^1\) for stimulating and enhancing creativity

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\(^1\) The distinction between terms such as techniques, methods and models and terms such as methodology, framework and approach was made in Chapter 4. It is upheld throughout the thesis.
have emerged from varying schools of thought. They might have come from disciplines such as psychology and education, or from clinical and industrial fields, for instance. Understandably, then, the methods and techniques possess varying strengths and weaknesses for different organisational contexts.

2.2.2 Sociological Awareness

The sociological awareness aspect of critical creativity might increase interventionists' awareness of the social consequences associated with using particular creativity enhancing methods. Practitioners of critical creativity would necessarily respond to the societal pressures which the participants face. At an organisational level, this will encompass a sensitivity towards the prevailing internal culture, and towards ongoing influential matters in the participants' environment. At a more detailed level, it might include a critical review of the composition of the group participants and the dynamics therein.

2.2.3 Human Well-Being and Emancipation

In a similar vein to critical systems thinking, critical creativity would seek "... to achieve for all individuals, working through organisations and in society, the maximum development of their potential", (Flood and Jackson, 1991(a), p49), thus disclosing an emancipatory intent. ² By remaining attentive to the mixture of participants - the mix of level of ability, the mix of dominant personality features and other potentially oppressing characteristics - their exercise of power could be assessed and a democratic, genuinely participative exercise aimed for.

These three commitments are naturally followed through into the nature and principles of critical creativity, as will be seen in the next two subsections.

² The works of Habermas (1972; 1974; 1984) provide valuable background material to this argument.
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2.3 Nature of Critical Creativity

Having established the philosophical foundations of critical creativity, a closer examination of its nature can be undertaken. To incorporate critical creativity into a problem solving framework is to integrate a form of creativity which demonstrates the following attributes.

2.3.1 Practically Useful

Critical creativity is intended to be practically useful for organisational problem managers. It aims to enhance the application of any chosen overarching problem solving approach. It does not therefore contradict or confuse the process by introducing conflicting aims and intentions. Critical creativity enriches the overall process and reinforces original principles.

2.3.2 Acknowledges Other Ideas

Critical creativity takes into account ideas developed from many viewpoints. Even though, as we shall see, the practice of critical creativity can be guided by a framework known as Total Systems Intervention, the nature of the concept is such that it does not attempt to restrict the use of theories to those of a systems base. A broad knowledge of organisations can be taken into account. In doing so, the critically creative process brings a greater possibility of enlightening participants.

2.3.3 Creates Diversity

By encouraging ‘quantity’, critical creativity can be said to create diversity. Creative thinking often results in many and varied outputs. The diversity propagated by critical creativity will provide a range of options for resolving complex issues. Participants will then be encouraged to explore the attributes of the various options, with input from external parties, and appreciate the differences between each situation.
Critical creativity allows judgment to be undertaken locally, yet takes into account the wider environment. The value of proposed changes to a situation is judged by those who are closely involved in the situation. After all, creative ideas which are not locally considered to be valuable will not be implemented with genuine commitment.

If we are clear about the nature of critical creativity, we have a guiding checklist against which we can identify to what extent our current practices are of that form. The ensuing discussion brings to our attention the principles to which we should try to adhere in our practice.

2.4 Principles of Critical Creativity

Developed from the discussion of its nature, there are a number of key principles underpinning critical creativity which are akin to the principles associated with the most recent version of TSI (Flood, 1995(a),(b)).

2.4.1 The Systemic Principle

This principle asks for an understanding of the ‘whole’. Only by gaining an appreciation of the complete scenario can a practitioner expect to proceed in an effective manner. As well as exploring the details of the circumstances of the issues for management, this principle could necessitate the understanding of a large number of organisation theories, creativity enhancing methods and theories of facilitation.

2.4.2 The Principle of Participation

Genuine and open participation reinforces the systemic principle. From meaningful involvement by as many parties as possible, multiple partial views can be taken into account.
2.4.3 The Principle of Reflection

Critical creativity has several reflective needs. Firstly, to reflect upon the dynamic relationships in the organisation, so that parties who may not be able to meaningfully participate can be identified. Secondly, there is a need to reflect upon the selection of creativity promoting methods and critically assess their suitability for a particular context. Next, practitioners will be encouraged to reflect upon the chosen creativity promoting method and choose an appropriate style of facilitation (for the method, participants and facilitator) so as to ensure beneficial application. Finally, it is important for users of critical creativity to reflect upon creative outputs and critically assess their suitability for taking forward to the next phase of the problem solving process.

2.4.4 The Principle of Human Needs

The three aforementioned principles all lead to the wider goal of the pursuit of human freedom. Critical creativity attempts to further the emancipation of individuals by encouraging participants to design freedom into their approach, to participate meaningfully in a process of open debate therein and to address coercive forces\(^3\) which hinder attempts to free themselves of their restrictive relationships with other people (Flood, 1993(a), (b)).

Having presented critical creativity in terms of its philosophical foundations, its nature and its underpinning principles, I will now introduce the framework which I am proposing as a managerial tool to guide its practice.

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\(^3\) Critical creativity perhaps does not deal adequately with the notion of coercion, at present. However, if it is practised within the problem solving framework of TSI, for instance, the interplay between TSI and critical creativity would probably guide the practitioner to move between the creative process and Critical Systems Heuristics in order to encourage power to be shared more evenly and a more emancipatory process to be developed. That is, there is the option to call a temporary halt to an oppressive creative process and move onto the next phase of the framework, retaining the commitment to return to the creative process when the situation is more appropriate.
Total Systems Intervention (TSI) is a framework for problem solving which first came to the fore in management and systems arenas some five years ago (Flood and Jackson, 1991(a)). Both from experiences of its extensive practice and from academic debate, TSI has been noticeably enriched since then (Flood 1995(a) & (b)).

3.1 Introduction

The current framework, (Flood, 1995(b)), while remaining true to “its original holistic intent of systems thinking” and reflecting its original foundations of critical systems thinking, is a much-advanced version. As Flood says, “TSI is, in essence, a process that enables ‘the problem solver’ to employ a spread of methods, first by creatively ‘surfacing’ issues an organization faces and then by choosing (a) method(s) best equipped to tackle those issues effectively.” (Flood, 1995(a), p174).

The circular process of TSI incorporates three phases - Creativity, Choice and Implementation. Each phase has a recursive structure; there is movement between all three phases at each stage of an intervention. The most recent version of TSI has separated the process into three Modes - Critical Review Mode, Problem Solving Mode and Critical Reflection Mode - all of which draw on the ‘Creativity-Choice-Implementation’ cycle. Figure 2 shows the recursive structure of TSI; this is the first time the recursive structures of the Critical Review Mode and Critical Reflection Mode have been included. Using this figure, TSI will now be discussed as a framework which is capable of critically guiding interventionists in the creative processes of their problem solving.

Having introduced TSI (more detail of the most recent version can be found in Flood, 1995(b) and Flood and Romm, 1996), similarities between its
philosophical foundations and principles with critical creativity have been surfaced. I now proceed to demonstrate how the meta-methodology of TSI can be used by organisational problem managers to guide their creative processes in such a manner that they reflect the systemic, reflective, participative and emancipatory principles of critical creativity; altogether resulting in a more discerning practice of creativity enhancing methods and leading to more creative outputs.

It will become apparent that this particular use of TSI could indeed extend the structure and enrich the process of TSI itself, in its employment as a framework to guide the improvement of problem situations. However, it is intended that this particular application of TSI could also be incorporated into other problem solving approaches which explicitly encourage creative thinking. Therefore, in this chapter, I discuss the process of practising critical creativity in an independent capacity.

3.2 Operationalisation of Critical Creativity

While I am advocating reliance on a particular process of thought to relieve us of some of the bewilderment generated by the diversity of viable creativity enhancing techniques, I am not suggesting that the integral parts of our thought process should become sterile and homogeneous. It should not be forgotten that TSI's fundamental building block - the C-C-I cycle - includes a Creativity phase. In fact we can identify twelve creativity 'nodes', labelled N1 through to N12 in Figure 2; that is, there are twelve 'opportunities' within the TSI process for creative exploration of the creative process. Four nodes exist within each Mode of operation.

Discussion of the pursuit of critical creativity is broken down into the TSI's three Modes of operation; their purpose and process are systematically set out, including the part played by each node. The process description is
undertaken in the ‘traditional’ clockwise Creativity-Choice-Implementation order. Then, practicalities are captured in case study material which is also ordered in this fashion; the practice being included so as to provide methodological guidelines and enhance discussion of the process.

3.2.1 Critical Review Mode

The purpose of the Critical Review Mode is to critically explore and appraise the candidate methods allied to creative thinking which could be taken forward into the Problem Solving Mode. The critique is structured by working through the cyclic phase of Creativity-Choice-Implementation. Inputs to this Mode can be taken from the wealth of established models, methods and techniques currently available or could conceivably be plucked from our own original contributions. Outputs will be those methods which are thought likely to surface creative potential.

In such an assessment, the purpose of N1 is to look critically and creatively at methods which may have the potential of stimulating creative thinking. N1 helps to surface as much information as possible relating to such candidate methods. The theoretical foundations of the methods may emerge, along with their assumptions of specific origins of creativity, particular styles of facilitation or preferred group composition may transpire. It is likely that many other factors will arise since the associated recursive structure, in which N4 plays a part, will help to suggest, select and utilise discussion points to ensure a rich variety of issues are grappled with.

Moving in a clockwise direction, the Choice phase assesses each proposed model and method through exploration of its ability to evoke creativity. Whether there is an emphasis placed on creating an environment which is conducive to creative thinking - free of constraints, free of external

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*Models, methods and techniques are interchangeable.*
evaluation but encouraging self-criticism, and appreciative of non-conformity — could be the basis for retaining the candidate. The recursive structure again, incorporating the creativity node N2, energises the phase and promotes openmindedness in the selection process.

Finally in the Critical Review Mode, the Implementation phase involves taking forward candidate methods into the Problem Solving Mode.

3.2.2 Problem Solving Mode

The Problem Solving Mode employs the system of creativity methods put together through the Critical Review Mode. Again it operates through the building block of TSI - Creativity, Choice, and Implementation.

The Creativity phase, N5, of this Mode asks the practitioner to explore the situation in which s/he intends to use a creative technique. Once more there is an intention to surface a diverse range of criteria of interest. Aspects such as the group dynamics, preferred modes of communication, physical resources available, and time allocated, may form part of the exploration. The recursive structure, including the creativity node N8, will play a part in painting as rich a picture as possible.

The Choice phase seeks to develop a means of categorising the various techniques from the previous Mode, probably building on some of the aspects raised in the previous phase. Many tools for rationalising the choice of technique could be usefully employed. For instance, one might envisage distinction between techniques on the basis of whether it is aiming for idea or image generation, whether it is aiming for incremental change or for quantum leaps, or whether the model or method demands a minimum level of cohesion in the group. But there are many other dimensions which a process of categorisation could take into account, which N6 attempts to raise. By bringing
Implementation of the selected creativity enhancing model or method forms the third part of the cycle in the Problem Solving Mode. Like all the other steps, the Implementation phase is not intended to be systematically carried out. N7 provides the node at which creativity can be integrated into the cycle to complement any creative components which would normally enhance implementation.

3.2.3 Critical Reflection Mode

The Critical Reflection Mode provides an opportunity to reflect on both the adequacy of the model, technique or method employed in the previous Mode and of its output. It is a Mode in which future practices of critical creativity can benefit from inquiries concerning whether a more appropriate choice of method could have been made and whether subsequent outputs were acceptable. So, there is another journey around the Creativity-Choice-Implementation loop as searching questions are raised about the whole activity, with contributions from creativity nodes N10, N11 and N12. In good practice of critical creativity, adherence to the key principles will be observed. A practitioner operating in this Mode will be encompassing reflection on these principles (as well as continuing to practise them) throughout the cycle.

During the Creativity phase, at node N9, issues associated with the implementation of the creative method are brought to the surface. A list of issues might promote a reflective process at several levels. At a personal level, it could be asked whether the choice of method was suited to the practitioner’s skill base or facilitation style. There may also be concern as to whether individual participants experienced or observed any emotional changes. At a
more general level there could be ‘measurement’ of the creative potential which
was reached and a qualitative value given as to how well the available facilities
were utilised. Open-minded practitioners, alone, will be able to compile a
comprehensive agenda but N12 may stimulate a more creative slant to the
compilation of information - a slant perhaps more in keeping with the
underpinning principles of TSI. Involving participants in meaningful feedback
exercises might be achieved by distribution of questionnaires and invitation to
informal meetings; altogether demonstrating a more holistic and participative
approach.

The Choice phase guides the practitioner in their use of the information
gathered during the Creativity phase of this Mode. It is an opportunity to
consider all those issues raised, with a view to learning from them and possibly
incorporating them into subsequent applications of critical creativity. Active
integration of N10 helps the practitioner to maintain an openminded state:
critical practice means neither succumbing to the temptation of ignoring
feedback which causes discomfort nor being overwhelmed by glowing reviews.
Adherence to the four original principles (2.4.1 - 2.4.4) is just as important in
this phase as in others.

The final phase of the Critical Reflection Mode is Implementation. This
is the point where changes in future practice, in similar situations, can be made.
It is a phase in which practitioners can decide how to utilise their new learning
so as to improve their practice. In essence, there is a translation of the intentions
from the Choice phase into actions so that, when there is reentry into the cycle
in the Critical Review Mode, the whole process is visibly enriched.

The three Modes of TSI and the operationalisation of critical creativity
have now been discussed in theory. Continuing this overview, the following
case study presentation will consolidate and clarify the process.
Section II
4.0 Case Study Example

This penultimate section shares the ‘semi-fictional’ practice of critical creativity. We have covered the philosophy, principles and process of critical creativity; it is now the turn of the fourth P - practice. However, before moving on to structure the case study through the three Modes of TSI, some background information of the featured organisation is given.

Organisation X employees about 200 people. It is a highly profitable British manufacturing company which is established on ‘traditional’ ideals; generations of families have been known to work there. The majority of employees are semi-skilled craftsmen. The tiny number of women employed by X undertake secretarial and administration duties. Progression to the small management team has, in the past, been achieved by excelling on the production line. Given the family atmosphere of the organisation, there is strong loyalty and commitment between workers and an accepted authoritarian style adopted by the managerial ‘father’ figures. The Board of Directors dictates all aspects of operation; there is no room for managers to assume their own style or initiate their own improvement projects. There is a resistance to change and a suspicion of outside consultants whom the Board of Directors might invite to X.

The culture of Organisation X does not appear to encourage creativity - workers are paid at piece rates. Actions in the form of production tasks bring a wage, thinking only slows down the job. So, it was quite a jolt to the members of the management team when the Board gave them responsibility for improving production flow. For the first time in their career at X they needed to be creative. In the past they had always responded to directives from higher up the pyramid. A specialist in creative management was called in to assist with the first meeting.
Now, an overview of the activities within the three aforementioned Modes is shared. I start with the Critical Review Mode.

4.1 Critical Review Mode

As we can recall from the previous section, the purpose of this Mode it to explore and appraise any candidate methods allied to creative thinking. Activities proceeded thus.

The consultant, in this instance, was already familiar with a variety of creative enhancing techniques; however, he was open-minded enough not to discount any new ones he might encounter in his literature search, perhaps, or during discussion with colleagues. He started by seeing how many techniques he personally could readily recall. The list began with brainstorming, followed by nominal group technique, role playing, and attribute listing. He then heard of a fellow practitioner who had tried out synectics and computer-based software. So, these were added to the list. Finally, a chance encounter of Morgan’s (1986) text introduced the consultant to metaphors. Since the design meeting was to be held in only a few days time, a list of seven items seemed ‘enough to be going on with’; so he did not attempt to search out anymore.

The consultant next creatively explored all seven methods and learned something of their features. Using some suggestions from VanGundy’s (1988) selection and evaluation criteria in addition to other ideas, he developed a collection of questions to ask of each method. For instance, whether any special equipment was needed, what the estimated time span would be to carry it out, whether the method is intended for idea or image generation, whether any special training or preparation would be needed, whether he had used it successfully before and many more aspects besides.
Given the wealth of experience of this creative management specialist, it is perhaps not too surprising that all items on his list of candidate methods did indeed have the ability to create an atmosphere conducive to creative thinking. So, all seven were taken forward to the Problem Solving Mode. It is that Mode which we now go to.

4.2 Problem Solving Mode

In this Mode, the system of creativity approaches which has been put together in the previous Mode is employed. Again, the consultant went through the Creativity-Choice-Implementation cycle as he explored the context of the situation, chose a method and then applied it.

The consultant was fortunate to be able to spend some time in the organisation getting a feel for how things were. Not only was he given permission to meet with individual managers, but he was also able to observe a management meeting. Bearing in mind that first impressions can sometimes be deceiving, the consultant built up a picture of the situation. While setting his boundary around the management team, he attempted to take a more holistic view by talking with production workers and others in the environment of the 'production system'. Amongst other things, he learned of the 'macho' image of the managers, of the long hours they spent on-site and of the emphasis they placed on tangible results. It was also apparent that the team operated effectively as a group, even if there was evidence of the older members being able to influence decisions more than the younger ones.

When it came to choosing an appropriate method for this situation, there seemed to be three dimensions that the consultant was required to think along. First of all, there was the limited time available for the exercise. Managers were already working long, tiring days so it would not be reasonable to expect them to start earlier or finish later than already. However, it came to light that the
company operated a four and a half day week and the managers' commitment to the project was demonstrated by their volunteering to allocate their next free afternoon to the exercise. So, about three hours were available. This limited the number of new skills which could be learned during the process.

Secondly, mirroring the pressures experienced by a manager in a high output production environment, the managers needed to have a tangible result from the exercise. Generally, they left meetings with a list of actions they had agreed to. This suggested that they would not be satisfied with a mental image. Idea or image generation was another dimension.

Finally, this consultant felt that an earlier recognition that the organisation would resist any major changes led him to consider the methods in terms of whether the process encouraged great leaps in creativity or preferred incremental steps.

On the basis of these three dimensions, the seven methods were then sorted, as carefully as possible, into the following categories:

<table>
<thead>
<tr>
<th>Method</th>
<th>New Skills?</th>
<th>Generates</th>
<th>Size of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorming</td>
<td>No</td>
<td>Idea</td>
<td>Quantum</td>
</tr>
<tr>
<td>NGT</td>
<td>No</td>
<td>Idea</td>
<td>Incremental</td>
</tr>
<tr>
<td>Role Playing</td>
<td>Yes</td>
<td>Image/Idea</td>
<td>Incremental</td>
</tr>
<tr>
<td>Attribute Listing</td>
<td>No</td>
<td>Idea</td>
<td>Incremental</td>
</tr>
<tr>
<td>Synectics</td>
<td>Yes</td>
<td>Idea</td>
<td>Quantum</td>
</tr>
<tr>
<td>Computer Based</td>
<td>Yes</td>
<td>Both</td>
<td>Both</td>
</tr>
<tr>
<td>Metaphor</td>
<td>No</td>
<td>Image</td>
<td>Incremental</td>
</tr>
</tbody>
</table>

TSI & Critical Creativity
Once the consultant had organised his potentially useful methods into these categories, he thought about the context of the problem situation a little more. Two appropriate matches between method and situation, based on the dominant features of the situation, had been surfaced - NGT and attribute listing. Given that the consultant had used the latter several times before, he felt more confident about using attribute listing than NGT. Attribute listing was the method he chose to implement.

Finally in this Mode, the consultant implemented attribute listing. It is not my intention to go into the details of the implementation of attribute listing here; as said at the start of the case study, it is an overview position that I am maintaining. Therefore I do not attempt to address the specific issues of facilitation at this point. It is sufficient to say here that the participants found the exercise to be of benefit - it gave them an insight into how they might want to run future meetings and also resulted in a long list of ideas for improving their production flow. The next Mode encourages reflection on its ‘success’.

4.3 Critical Reflection Mode

So, the consultant reached the third Mode of Critical Reflection. It is a Mode in which there is the potential of improving future practice by inquiring, amongst other things, about the adequacy of the model employed in the previous Mode.

The value of taking time out to reflect on the foregone activities was recognised by the practitioner. He also appreciated the value of collecting the views of the participants and their colleagues in the organisation, in addition to his own personal thoughts. Maybe, too, a fellow practitioner would have time to discuss the events. So, there was a period of inquiry over as wide a variety of aspects as possible. He drew up a long list of aspects for discussion and deliberation. Could he have chosen a ‘better’ method - for him? for the
participants? Could the method have been facilitated better? Had he been too authoritarian? or too democratic? Should he improve his own creative capacity? Did everybody genuinely participate? Would the participants actually take the output into the organisation and actively use it? and so on. There was so much he could learn to improve his future projects.

When the practitioner had received most of the expected volume of feedback, he determined to give all of it some attention. There were two choices that he made at this stage however. One was to give precedence to the views expressed by participants whose opinion he most respected - even if not in agreement with his own - and the other was to only consider factors which he could have altered - that is, variables within his control. Variables outside of his control would not be forgotten, merely put on the 'back burner', to revitalise in future scenarios.

The main worry that was carried forward was that sight had been lost of the emancipatory principle (although, understandably, participants had not phrased it in those terms). While the technique of attribute listing had given a sense of order to proceedings (something which had been useful since this was a 'first time' for the managers) and the process itself was not too radical, (there were no psychological trips or dramatic role-playing which might have perturbed them) they wondered if the culture of the organisation had been reinforced and consequently, hindered any bids to escape mind traps. Nevertheless, it had been recognised by nearly all parties that should this practitioner work with this group again, the trust that had been generated would no doubt allow for a greater step towards human freedom.

So, in this final phase of reflection, one issue which the practitioner continued to contemplate was the lack of overt adherence to the emancipatory intent. It was a tricky one. Other issues which he would implement were more
Perhaps in another creativity project he could be more creative himself. Maybe he had been too sympathetic towards the organisational culture and tried to fit it too neatly, rather than trying to change it. Ought he to be more radical in his own approach? Had he played to the presiding management style because they were paying him? These were very difficult issues to grapple with alone. Another journey around the loop with more external input might help him be more conclusive.

All three Modes of TSI have now been considered in practice and discussion of the operationalisation of critical creativity is now complete. Its practice would, of course, include iterative cycles with each iterative cycle bringing more insight and learning to the process. Only one cycle has been described here. All that remains is to summarise the key issues addressed in this chapter.

5.0. Summary

Integrating the substantial wealth of information concerning creativity with a similarly extensive supply of organisational problem solving approaches clearly showed that such diversity could present a predicament. Diversity calls for choices to be made at some stage. Choice is welcomed by some. Others view choice with bewilderment. While it was recognised that approaches such as idealized design and imaginization have been successfully practised in the contexts to which their creativity component is most appropriate, inexperienced practitioners may encounter some difficulty in selecting a method which had a high chance of ‘success’ in their intervention situation. A desire to be offered guidance in such decision making processes prepared the way for the development of ‘critical creativity’.
The developmental work of a methodology to guide the practise of critical creativity was not as extensive as one might have anticipated. Since I was already familiar with a range of established methodologies one might accuse me of taking an ‘easy option’ and using one ‘off the shelf’. However, that was not the case. PAR, with its systemic, creative and empowering underpinnings, did not guide me to respond in that way. Having defined the concept of critical creativity in terms of its principles and philosophy, it was quite a creative step to juxtapose TSI with it.

The framework of TSI was put forward as a framework capable of guiding interventionists in their pursuit of critical creativity. Further research into this capability will no doubt produce a more sophisticated version. While TSI may move practitioners along the creativity spectrum, sometimes suggesting an intervention strategy as outrageously creative as idealized design or, at other times, suggest a slightly more restrained approach such as imaginization, the practitioner can be confident that the movement is based on sound philosophical foundations and principles.

The next Section, comprising Chapters 7 and 8, discloses two ‘real’ creativity projects in which I played an active role. As will be revealed, the situations were different in respect of the organisations and their expectations. The situations were also different with regard to the creativity which was practised. Creativity \textit{per se} was practised in the first and critical creativity was pursued in the second. As well as surfacing other important issues, an analytical comparison of the two approaches draws out the increased benefits experienced when practising the latter.
SECTION III

Practise is infinitely more sophisticated than the theory which is supposed to inform it. The popular notion that a higher order of human activity is connected with theory than with practice or experience is a prejudice of Greek antiquity, constantly challenged but just as regularly affirmed.

Thomas A. Cowan, 1989
(Systems Practice, 2, p4)
CHAPTER 7

1.0 Introduction

The purpose of Section III, comprising Chapters 7 and 8, is threefold. Firstly, the case studies described in this chapter and the next, aim to illustrate the ideas presented thus far. That is, the operationalisation of critical creativity through Total Systems Intervention (TSI) is taken into a real life practical forum. In doing so, not only is the content in Chapter 6 brought under closer scrutiny but so are the contributions of all the preceding chapters. The second aim of sharing this case study material is to encourage the analysis of the application of my hypothesis and thus bring a deeper understanding and further enrichment of it. Through the investigation of these two applications, new theoretical and methodological insights are cast and the process of practising critical creativity is enhanced. Finally, the practical platform of Section III affords me the opportunity to test and validate my hypothesis; an important stage if it is to gain credibility.

Within these general aims, the individual chapters fulfil more specific objectives and make their own distinct offerings to the overall thesis. It is the aims of Chapter 7 on which I now focus. Chapter 7 shares an example of a case study in which critical creativity was not explicitly practised. In fact, the project was undertaken at a time when the notion of critical creativity had not even reached a stage of development. However, exploring this case study through the framework of TSI brings both practical knowledge and further feedback to the hypothesis. In addition, this retrospective journey is an opportunity to reflect on aspects which could have been tackled differently so as to have promoted the creative components and brought more creative solutions; the luxury of hindsight is cannily brought into play. Travelling through the three
Modes of TSI frames a process of acknowledgement of the extent to which critical creativity was subconsciously practised and highlights the benefits of its premeditated practice.

Going into a little more detail, this chapter discusses a case study in which the creative problem solving approach known as Soft Systems Methodology (SSM) (Checkland, 1989; Checkland & Scholes, 1989) was employed with a team of six paid workers from the voluntary sector. The team members were intent on exploring their responsibilities, as perceived by themselves and others, and the extent to which they were being fulfilled. In short, an evaluation exercise was requested; but this one was different from most for, as the story reveals, this evaluation was not only embodied in SSM but it was also embraced by PAR - my chosen overarching research strategy as defined in Chapter 2.

Checkland has already been introduced in Chapter 3 as someone who made, and still is making, a major contribution to the systems field during the participative problem solving era of the 1980s. He took the rather unorthodox step of acknowledging the existence of systems as abstract entities, rather than considering them to always be tangible entities such as hard systems. The conscious transition from real world thinking to ideal, systems thinking can be identified as creating an opportunity for the acceptance of creativity as an integral component of systems problem solving. Interestingly then, in a similar manner to which MDT underplays its creative potential, the creative potential of SSM is hardly ever a prime issue for debate; the same can be said of its evaluative potential. Understandably, there has been more attention paid to adherence to the original underpinning principles of the approach; as will be
seen, Checkland does not define a principle of creativity for SSM.

It is not surprising that I too have been influenced by the fundamental intentions of the process and have in the past chosen to portray the empowering potential of the methodology (Ragsdell, 1995(a), (b), (c)) brought about by the principles of two modes of thinking, learning, culture and participation. However, more recently I have reviewed what might have seemed to be a myopic view of SSM and now write of its application more specifically as a creative problem solving framework.

The practice of creative thinking via the application of SSM is presented in the following way. I start with a brief introduction of the problem situation. It is not necessary to burden the reader with an in-depth introduction at this stage since a deeper understanding of the organisation will inevitably develop as the application of the methodology proceeds.

Even though I have declared that I did not consciously practise critical creativity within this case study, I go on to usefully structure the body of the presentation through the process of TSI, the framework discussed in Chapter 6 as a means of operationalising critical creativity. I assume that the original operation could/should have been attempted through TSI. It will become evident that at the time of the case study, most effort was given to the Problem Solving Mode of TSI (as it has now become known). It is only here, retrospectively, that the other two Modes are given any attention; hence the imbalance in material between the Modes. So, the presentation starts in the Problem Solving Mode. An account of the activities in this Mode are given and is followed by an

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Checkland might raise a verbal defence and say this is not so. But, a verbal defence is not good enough; documentation of the relationship between SSM and creativity is required. I could probably argue a case in Checkland’s favour as I believe that creativity could be inherent throughout SSM. For now, in the absence of literature to the contrary, I must treat the creative components as those which are generally accepted to be so. As will be shown, they are the rich picture stage and the stages undertaken away from the real world.
analysis of the extent to which the creative nodes were utilised. The analysis uses the benefit of hindsight and an acknowledgement of critical creativity.

Maintaining the traditional forward direction of TSI, the presentation moves into the Critical Reflection Mode where further analysis of the Problem Solving Mode is the theme as improvements for subsequent practices of critical creativity are put forward. The time delay between the operation of the Problem Solving Mode and this Mode means that the Critical Reflection Mode is able to draw on an understanding of critical creativity right from the start. Not only can a deeply reflective process be anticipated in which the creativity nodes are employed, but the new learning which is generated will be firmly grounded in the notion of critical creativity. Reflections in this Mode and subsequent analysis of the process, bring forward new contributions to the practice of critical creativity.

The Critical Review Mode is next. Although this Mode was not operated at the time of the intervention, its discussion completes the three Mode cycle. Had a Critical Review been executed in the first instance, clearly the sequential Modes would have been very different. There is little point in hypothesising about these differences. Hypothetical information was the basis of Chapter 6; here in Chapter 7, actual events are ‘the name of the game’. Chapter 8 follows all three Modes in a traditional order; it is there where the Critical Review Mode comes into its own.

In each Mode there is a tour around the Creativity-Choice-Implementation loop which opens up avenues of discovery concerning the SSM application and beyond. When all the Modes have been covered, I am in a better position to defend my hypothesis. So, a partial defence for critical creativity in the light of its non-practice, forms the final section of this chapter.
Section III

First, then, I introduce the organisation and the problem situation.

2.0 Setting the Scene

The scene is set by describing the wider organisation in which the team was employed. This provides a backdrop for a more detailed introduction to the team members and a mention of the lead up to the evaluation request rounds off introductions. Other details will be gleaned as the case study detail unfolds.

2.1 The Organisation

In most major towns in Britain you will find a Council for Voluntary Service (CVS). Although the Councils may vary in size, they are all registered charities which promote local voluntary action. Members of a CVS are generally local voluntary groups and organisations, the local authority and other statutory bodies, working together in partnership. Their overall aim is to help local voluntary organisations and community groups to develop and become effective. Hence, there is a commitment to five areas of activity: there is a commitment to provide a focal point for local voluntary action; to act in a liaison capacity; to represent the voluntary sector to appropriate statutory bodies; to perform an educating role and to develop new areas of voluntary activity. Two principles underpinning these activities, and of paramount importance to the organisation, are to respond to local needs and to help others to help themselves.

Hull CVS is no different from the general description above; it is an ‘umbrella’ organisation for the local voluntary sector. However, by national standards, it is a large organisation with a high profile. Although its size has enabled a degree of specialisation in its functions, retention of a representative structure enables it to help the local community respond effectively to social needs. Core functions are distributed amongst designated Sections in the
organisation in its bid to achieve the aforementioned aims - the Development Team is one such Section. I now consider the primary features of this team.

2.2 The Development Team

At the start of this case study, the Development Team comprised six members. It was a recently formed group of highly motivated individuals from wide-ranging backgrounds. The average age of the group was mid-thirties and most were educated to degree level, in a variety of subjects. Almost all were employed on a part-time basis, and had been happy to accept employment with an organisation that upheld such a worthy underlying ethos. Only one member had been with HCVS for more than eighteen months.

The roles of the members in this Section were undertaken by the following workers: the Hull CVS Coordinator, an Information Worker, two Community Development Workers, a Development Coordinator and a Project Organiser. Attention was given to enabling the team, and indeed the whole organisation, to function as non-hierarchically as possible. The empowering philosophy which underpinned external relationships was also a basis for internal ones.

Having given a brief introduction to the team and its employer, I now move on to relate how I encountered the CVS Development Team.

2.3 Lead Up to the Evaluation

The invitation to evaluate the Development Team came via a Research Fellow at the University; it transpired that the CVS coordinator had contacted him and suggested that the team might benefit from an examination of their activities. I quickly learned from the CVS Coordinator that there was a concern that the contest for funding was becoming increasingly competitive and the
vagueness of development work was a little too risky for potential funders. It was felt that if a more goal-oriented approach - even if only at face-value - could be presented, then funders would feel more at ease about backing the Development Team's work.

So, I joined the whole team at one of their meetings. At that stage I admitted that I did not know much about the voluntary sector but I was prepared to spend some time with them, see what their work involved and then decide whether their request for an evaluation undertaken by me was feasible. Having previously only been involved in profit-making organisations, I had felt a certain apprehension at the prospect of this intervention. I was concerned that we would not be 'on the same wavelength'; that our values and beliefs might not be compatible. Even so I was also excited at the prospect of observing, and sharing, the unfamiliar motivations which drove this team. In addition, although it was clear from the start that there was not going to be any financial gain, there was the prospect that this work might provide useful research material.

Having introduced the essentials of the scenario, I will now move into the Modes of TSI to explain and analyse how the rest of the case study went. It is to the first recursive level that I go, as shown earlier in Figure 2. As said before, much of this case study was undertaken in the Problem Solving Mode; it is to that Mode which I now turn.

3.0 Problem Solving Mode

As can be recalled from Chapter 6, in essence the Problem Solving Mode of TSI guides the practitioner in their employment of creativity approaches. If operating in the traditional sequence of TSI, that is in the sequence of Critical Review, Problem Solving and Critical Reflection, then it would be the employment of approaches which had been through the Critical
Operating through the three phase cycle of Creativity-Choice-Implementation the Problem Solving Mode can be broken down into three tasks. The first phase asks the practitioner to explore the situation in which a creative approach is to be used; the second asks for a choice to be made of the most suitable approach(es) for the circumstances while the final phase entails the application of that choice. It is those three tasks which I now tell of for the CVS scenario.

3.1 Exploring the Situation

Past consultancy work had taught me the importance of resisting the temptation to dive into an intervention. It was crucial to deliberately and diligently find out about the situation that I, as a practitioner, was in. An exploratory process can not only help to build an effective client-customer relationship (including the option to end it before the explicit intervention phase begins) but it also aids in the surfacing of issues which need to be tackled. So, before committing myself to undertaking the evaluation exercise I spent some time finding out about various aspects of the Development Team.

3.1.1 Lines of Inquiry

The introductory meeting with the team had conveyed the message that individual team members worked semi-autonomously. Not only were some located at offices in their area of geographical responsibility, but there was very little common ground in their everyday functions. Limited use was made of each other’s skill. Contact between members, other than at a scheduled monthly meeting, was purely at a social level and 'out of hours'. The clear differences between each of their roles identified an initial line of investigation as I resolved to learn about each role.
Ideally I would have liked to have workshadowed each team member for a day or two. However, the sensitive nature of the projects of some members meant that workshadowing had to be limited to the Information Worker. The other workers often visited refugees, battered women and other disadvantaged groups. The presence of an observer such as myself would not have eased the forging of an open, trusting relationship between the worker and such parties; quite the reverse might happen. So I had to find another, more disclosing route of discovery.

My next avenue of exploration proved to be more fruitful. I invited each team member in turn to structure their thoughts through confidential interviews. There were several aims for this exercise. As well as intending to form a closer relationship with each individual team member I wanted to provide a safe atmosphere in which they could reflect on the many aspects of CVS and the Development Team, and ultimately consider their effectiveness. In each case, the structure of the interview was similar but was flexible enough to accommodate any digressions the team member felt inclined to make.

Meeting at the team member's office, the format of each interview encompassed discussion from a detailed level to an overview. As a means of breaking the ice, we shared our backgrounds and how we came to be where we were that day. Then each individual was encouraged to examine their role in the team: how they were accountable; whether they had any goals, be they official, personal or otherwise; what their work content was and so on. Towards the end of the structured part of the interview I asked them to comment on the Development Team. Finally, there was an open forum where any number of related issues were pursued at the instigation of the team member.

In parallel with these individual discussions, I observed and participated
in the team's scheduled meetings at the CVS headquarters. In doing so, I was able to get a feel for some of the wider issues which affected the team and for the group dynamics which prevailed amongst the six. The interconnectedness between their roles became a little more evident at these meetings and the individuals themselves started to recognise common ground. There were also opportunities for me to learn about the Development Team from their activities in the community. When my presence was deemed to be unobtrusive I accepted invitations to see team members interact with their consumers in organised events such as regional Community Forums.

From these various lines of inquiry I was able to put some of the pieces of the jigsaw together. The following picture emerged.

3.1.2 Insights about the Development Team

At the time of this exercise the Development Team was endeavouring to operate in a turbulent environment; the team was continuously adapting and reacting to changing community needs. An environment of this nature was greatly inhibiting the actions of the team and suppressed their impact in the community. Although this kind of operation is often accepted as the norm in the voluntary sector, in this instance it was thought to be provoked by several specific factors, a few examples of which will now be identified.

To start with, the term 'development work' is open to various interpretations; each interpretation influences the way the nature of the work is viewed. So development work could be thought of as ill-defined and suffering from the lack of hard and fast rules. This becomes most apparent when deciding which functions and projects fall legitimately into that category. Such a potential disadvantage could be offset by the luxury of the freedom that is presented to team members to respond to genuine need. However, it is not quite so
Another contributing factor to the turbulence of the team's environment was due to their lack of financial independence. The unexpected fluxes in the work which the team was expected to take responsibility become even more unsettled by monetary concerns. There can be uncertainties in the availability of funding for new ventures and, at times, for the team members’ own posts. This situation introduces an element of 'short termism' into the group philosophy and often restricts the opportunity for long term planning.

Amidst these perturbations, the Development Team faced a more longstanding dichotomy. It is in an unusual position in that the customer (the body that pays) of the team’s services is not the consumer (the end user). This means that there are at least two parties to satisfy; these two parties often have conflicting requirements. There are obvious advantages in satisfying the funder, but when constraints are placed on the type of service offered to the consumer, or certain consumers even excluded, the team is rather ‘caught in the middle’. The presence of this political element creates a potential dilemma and can lead to frustration and personal dissatisfaction amongst members.

In addition to these more specific factors which unsettle the environment of the team, there is a general lack of awareness shown by the community about the role of the CVS organisation as a whole. The intangibility of its goals is often an obstacle in earning credibility with the public. When this is added to the ill-defined nature of development work, it is understandable that the community often has expectations of this team which are unrealistic.

So the environment of the team was one of overshadowing uncertainty.
They were suffering from lack of security in nearly every respect - in terms of their continued employment, of the continuation of their projects and of the local community needs. It is understandable that these uncertainties in turn led to doubts as to whether the team possessed the skills to tackle their work and if they were in fact satisfying any party.

Once I felt confident that I appreciated the circumstances of the team I committed myself to an evaluation exercise with them. Then we had to decide what method(s) or approach(es) to use. This is discussed in Section 3.2 but first I analyse the creativity components of the exploration phase.

3.1.3 Analysis of the Creativity Phase

Casting our minds back to Figure 2, we may recall the twelve creativity nodes in the operationalisation of critical creativity. This exploratory stage is in fact a Creativity phase in its own right. It is a creativity node - N5 - which is enriched by the recursive loop including N8. Had I been following the TSI framework I would have expected creative thinking to have been abundant in this exploration. That has been shown not to be so. The lines of inquiry which I adopted for this phase did not lend themselves particularly well to divergent thinking. It is that weakness which I now uncover as I analyse the interviewing procedure.

First, I consider the actual method of inquiry. While I consciously aimed to conduct the interviews in a relaxed atmosphere, there is no denying that a structured, prearranged interview has an air of formality. Formality suggests that difference is not welcome and there is an expectancy to conform. This is in contrast to the specification of an environment conducive to creativity expressed in earlier chapters. So, the method chosen to explore the situation did not encourage looking beyond accepted boundaries and paradigms. Interviewing
did not challenge the assumptions of the team members, nor did it promote their denial.

Alternative methods might have brought forward more far reaching descriptions of the team situation and reframed the information which I had gathered. Had I originally followed the critique process for critical creativity for this particular context, body sculptures and metaphors could have emerged as alternative means of exploring organisational life. Practising these might have pushed back the boundaries of the team’s minds and proved to be more fun than controlled dialogue. Also, the ice might have been broken sooner had I taken the team, collectively, into unknown territories.

Environmental factors undoubtedly inhibited the interviewees and suppressed their creative potential in this instance. A specific example is the physical setting of the interviews. There was a fear of being overheard by workers in adjacent offices. Spontaneity was missing. Sometimes the team members whispered as they conveyed information; at times they made me promise not to repeat to anyone what I had heard. Of course I cannot generalise about such issues; that would not be in keeping with critical creativity as a tool for guidance rather than a method. However, in response to that issue at that time, a different setting away from the workplace could have been productive. A setting in which there was no danger of eavesdropping would have freed up thinking. A walk in a forest or in the park could have been ideal. Neutral ground could have been used.

Another opportunity for increased creative potential was missed by interviewing team members on their own. There was not the synergy which is expected of a group, albeit appropriate group dynamics are needed for such a
synergistic display.\textsuperscript{2} Free wheeling and hitch hiking, as experienced in brainstorming, are not easy when there is a sole contributor. Indeed, with the spotlight on one person, maybe there is increased pressure for them to consistently perform meaningfully and avoid being outrageously creative.

With hindsight, the exploration of the situation was lacking in intent to surface creativity. If I had been operationalising critical creativity then creativity nodes N5 and N8 would have been ‘purposely activated’. The recursive loop, including N8, would have brought forward creative techniques for organisational analysis which could have been creatively chosen and implemented so as to be both valued and novel for the context of intervention. Nevertheless, there was much that was positive from this period of investigation. Not only had I been given an insight into the Development Team but in just a few weeks I had managed to build friendships with each member. These were friendships based on mutual trust and respect for each other’s work; relationships which could only assist in the progress of this exercise.

3.2 Making a Choice

The process of choosing a methodology for this situation was swiftly managed. Despite having a limited repertoire of my own, I endeavoured not to let this sway my decision. Access to experts in other methodologies widened the selection from which to choose. With a priority of using an approach which was appropriate for the circumstances, the choice process went as follows.

It had quickly become apparent to me that the original request for an evaluation of this team was not going to be as straightforward as I had hoped.

\textsuperscript{2} Group dynamics were not such that issues were easily raised in group activities. Some of the issues raised in individual interviews were not raised at all in other circumstances. I could not encourage their discussion on such occasions since, in several instances, I had been sworn to secrecy. This is another issue which needs handling ‘on hoof’ and one which theory cannot easily guide.
Before exploring the situation I had reviewed several well-used evaluation approaches in anticipation of their use. However this preparatory work was to have been in vain. After the exploration phase, I did not believe that a standard evaluation - resource based, goal based or multi-actor based, for instance - would be suitable for this particular team. I did not think that it would be constructive for a team of such a tender age to adopt such a hard approach. The team wanted to move ahead and I wanted to give them every opportunity to do so. In my opinion, a more positive approach, which could provide support and guidance, was required for them to recognise their own strengths. At a later date a different form of evaluation could perhaps prove useful.

Elimination of hard evaluation approaches cut the selection down considerably and a reexamination of the situation progressed the choice process further. The situation so far had seemed rather fuzzy. There was no clear idea on what constituted the problem situation nor on what action should be taken. There was a requirement to be able to evaluate and improve development work, but there were no obvious starting or finishing points. It was an ill-structured problem situation.

The very use of those last four words immediately connected me with Checkland's SSM. Messy situations were tackled by SSM; a belief I had grasped and held on to from an earlier dissertation project. I decided to use the methodology again and continued to justify my choice through some of its principles. For instance, since the team was not yet well established, an exercise which relied on participation seemed an ideal opportunity for relationships to be strengthened and for the team as a unit to grow. I further convinced myself that SSM was a 'good' choice since I anticipated that, as outputs emerged from the process of learning, understanding, participating and culture development, the team would realise the effects of empowerment. In keeping with the ethos of the
Hull Council for Voluntary Service, that of ‘helping others to help themselves’,
the tools of SSM were to be offered to the Development Team for their own
use, in this exercise and after. The team was in effect invited to undertake their
own evaluation and learn lots more en route.

Although the application of SSM seemed to be an attractive proposition
for this particular situation, there was some apprehension. In previous
applications of SSM I had not conscientiously adhered to its underpinning
principle of participation for I had played the role of the ‘consultant’ and
undertaken the applications as an ‘expert’ working alone. I therefore had
reservations about the amount of time it would take to share the tools with the
Development Team and, indeed, about how this might be carried out. I was also
concerned over how consensus might be reached - the aim was not for seven
people to apply SSM individually, but for a group to apply it and to benefit from
the experience.

3.2.1 Analysis of the Choice Phase

Looking at it through the framework of TSI and the operationalisation of
critical creativity, this phase was gravely disadvantaged. Indeed I had actually
preempted the Choice phase by examining hard evaluation approaches even
before exploring the organisation. I had not adopted an open-mind. The non-
existence of a selection of approaches from the Critical Review Mode coupled
with the absence of any energisation by creativity node N6 left the Choice phase
rather dull and lacking in imagination.

As with the exploratory phase, choosing a model or methodology did
not push back any frontiers; there was no Aha! experience. There was no
synergy sought from the involvement of others. Chapter 6 told us this phase
was a bringing together of a richly informed impression of the arena for action
and a creative categorising tool, such that a choice of the most suitable approach
could be made. There was nothing to categorise. This phase rather fizzled out.

Even so, an approach was chosen. Once I had hit on the connection
between ill structured problem situations and SSM, as far as I was concerned
the decision had been made. Somewhat blinkered, I did not look for
alternatives. I had experience of the application of SSM and felt at ease with this
‘choice’; it was ‘meant to be’! With the choice having been made, the
implementation followed.

3.3 Applying the Chosen Method

Given that SSM has not yet been fully described, this section
intertwines a summary of its steps with a description of its application. Again,
this is so as not to burden the reader with superfluous background material.
Remembering we are still presuming to have been operating in the Problem
Solving Mode, I recount the application of the methodology with the
Development Team and then go on to consider the use to which the creativity
node N7 could have been put.

3.3.1 Introduction to Soft Systems Methodology

To quote its originator, “SSM is a learning system. The learning is about
a complex problematical human situation, and leads to taking purposeful action
in the situation aimed at improvement, action which seems sensible to those
concerned” (Checkland, 1989, p78). SSM is represented in Figure 3. It can be
considered to be a seven stage process of enquiry which can be used to
approach ill-structured problem situations. By adopting parts, or all, of this
methodology a decision maker is taking the opportunity to reframe the actual
problem and to develop possible improvements.
Flood and Jackson’s (1991(a)) summary account of the methodology reminds us of the “four main principles that a user should be aware of and remain aware of when employing SSM. These concern learning, culture, participation and the ‘two modes of thought’.” Developing these principles slightly more, we can see that SSM articulates a cyclic process of examination, evaluation and reflection - a learning system. That is, there are no preset goals to achieve as in hard approaches. Secondly, SSM tries to ensure recognition of those real world constraints, which recommended changes must adhere to. Thus, there is evidence that the notion of culture strongly guides the interventionist. Next, the success of SSM relies on the genuine participation of the problem owners at every stage and finally, the ‘two modes of thought’ refer to real world thinking and systems thinking; the passage from one to the other is to be made consciously. These principles support the implementation of SSM.

From my initial introduction to this group, I had attempted to secure an open and informal atmosphere. I had not hesitated to stress the fact that nobody could predict what we would unearth along the way. The full implications of the application of SSM were unknown. Despite that ‘black hole’, a high level of trust was readily established and subsequently maintained. This was a style of interaction which I continued to use during the implementation since it was most conducive to creativity and participation.

With no recognised format for introducing systems thinking into organisations, the process was, by necessity, pragmatic. No-one in the team had any previous formal training in systems thinking, so there was the obvious advantage of a common starting level. Although the general framework of SSM was presented to the team in the early days, it would be more correct to say that

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3 These are Flood and Jackson’s (1991(a)) interpretation of the principles, not Checkland’s originals.

4 While the actual application of the methodology was not simply ‘trial and error’ there was a tendency for me to ‘feel my way’ in its introduction.
each specific stage was discussed and then pursued as a discrete entity. Indeed, most stages were scheduled for separate occasions. The venue for the stages was usually at my base, where the team had the luxury of concentrating solely on this task, without the distraction of other work commitments. This arrangement also had the potential of provoking more objective examinations of the Organisation. Feedback sessions, usually incorporated in a routine Development Team meeting, followed each stage to give the chance for individuals’ commitment to the exercise to be expressed along with suggestions for the next stage. These were vital to the maintenance of momentum for the project.

3.3.2 Carrying Out The Seven Stages of SSM

It was sometimes difficult to define the end of one stage and the beginning of another, but this is inherent in the cyclic, iterative nature of the methodology. Each stage was, perhaps, not strictly adhered to, but still provided a useful part of the framework for ‘problem solving’, and enabled progress to be made. Neither of these observations is peculiar to this particular instance and remains in keeping with Checkland’s intentions.

The first two stages involve finding out about and expressing the situation in a cartoon-like format. The earlier interviews of the exploration phase served very well as a preparatory stage for the ‘rich picture’ so hardly any additional conscious exploration was done prior to engaging in that stage. A rich picture showing the processes, structure and climate of the situation was drawn by the team on a large sheet of paper during a three hour session. There was some initial hesitation to commit thoughts to paper and, although not all information divulged to me in the interviews was brought forward in graphic form, the picture was reasonably rich. The picture concentrated on the group level, ignoring reflections on individual efforts, and probably served to
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demonstrate the team dynamics at that time. Major benefits however were from the discussion of issues which arose during the compilation of the picture rather than the output itself. A new level of understanding of the individuals and their current activities was reached. Certain political agendas were surfaced and a slight resentment towards the value systems of the Information Worker and CVS Coordinator.

The official title of the third stage - root definition formulation - though not totally avoided, was underplayed. I chose to relate to ‘systems which would tackle the themes that had been highlighted by the rich picture’ 5. In this instance, one particular system was seen to be able to tackle most themes which had been expressed - lack of guidance, lack of clarity of roles, the need to be able to use time more effectively, the requirement for a common direction for the team. A system which would enable the team to assess and prioritise new development projects in order to relieve themselves of the insecurity under which they often operated was defined. The CATWOE process was used to good effect in checking the validity of the root definition.

Various evaluative elements were to be contained by this system - for example, the need to enquire whether appropriate resources were available for each project; the need to evaluate how effective the team could be in a project; and the need to evaluate the customer. Maybe, surprisingly, it did not appear to be too difficult for the team to adapt to thinking in the systems world - it seemed to be somewhat of a relief to disregard the real world constraints!

The building of conceptual models for the fourth stage followed naturally in the same session as the third. There was a concerted effort to proceed immediately while there was a high level of anticipation. A sense of achievement too, was starting to build up as progress became more overt. The

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5 This is similar to the Open University Summer School SYST999 form of teaching.
exercise had gained significant momentum by this stage and the stream of creativity was in full flow. A model, based on verbs such as ask, examine, assess, monitor, evaluate and discuss, was formed for the analysis of new development projects.

The remaining stages were impossible to define as neatly as events. Stage five was not explicitly carried out, but there was a frequent transition between the modes of thought as the conceptual model was built. There was iterative comparison between models and reality. Meanwhile, the final two stages of SSM asks participants to define changes and take action. The nature of the proposed improvements for the problem situation - the introduction of the framework for assessing and prioritising development projects - suggested a different approach to the team’s work. It might have seemed a radical change, but since the team itself had proposed it, any possible cultural obstacles did not arise. An outline of the framework is given in appendix IV. The team ‘owns’ the solution and will actively support its implementation. Thus, these two stages are happening as a matter of course, with little need for guidance from a predefined methodology or from a facilitator.

At this point discussion of the actual implementation of SSM ends and its analysis begins.

3.3.3 Analysis of the Implementation Phase

In common with the other phases, the Implementation phase is not intended to be systematically undertaken. The incorporation of N7 ensures that creativity is injected into the implementation of a methodology. The form that this creative contribution takes can be an independently originated source and / or a complementary feature for any creative components already present in the methodology itself. It is the second form which I consider here. I consider the
creative elements inbuilt into SSM and examine whether their creative potential was maximised during this application. The rich picturing and the stages undertaken away from the real world are those which are generally recognised as creative elements.

The process of rich picturing positively encourages participants to articulate their reality in a new way. Communication of the problem situation is intended to be undertaken in a genuinely open, participative atmosphere with all issues surfaced to be included in the picture. Albeit the rich picture is drawn in the real world, it is given the freedom of free expression and that granted by poetic licence. Checkland is in fact promoting some of the characteristics of an environment which enhances creativity, as discussed in foregone chapters. In this case study, creativity was constrained by the allowance of only one medium and one form of diagram. Some individuals wanted to draw their reality in terms of flow charts, others were happy to let the process be dominated by people ‘who could draw’. An air of reticence could easily have set in if I had not made a determined effort to promote full participation. Perhaps, the node N7 could have been employed to introduce alternative forms of expression. As mentioned in Chapter 5, some people are more creative in preferred mediums. Maybe a different version of a ‘rich picture’ could have been developed by each person - using other image generating techniques - without losing the benefits of working in a group.

There was a sigh of relief from participants on leaving the real world and entering systems thinking. This was a reaction which inspired an overtone of excitement and expectancy to be thrilled by imaginative thoughts. Creative thinking was high on the agenda of all. So it was quite a surprise when participants were overly keen to relate their models to reality. While there were flurries of wild suggestions the radical ones were soon dropped in favour of
more sensible ones. The reason for this rejection can be explained by the repeated need for participants to question the theory of the root definition formulation and the conceptual models. Progress in creative processes was hampered by the desire to return to a lecture format in which I, the facilitator, would advance their knowledge of this new terminology. The fascination stayed with the theory rather than with the practice.

Had I used the creativity node of N7, maybe an all encompassing introduction to these stages would have emerged which satisfied all curiosity, or additional techniques for encouraging creativity would have sprung to mind. A session of brainstorming or synectics might have distracted the team members from the academic material and helped them focus on the building of conceptual models. Time constraints understandably had to be taken into account, but not at the expense of creativity.

Node N7 could also have independently promoted creativity. There was evidence that the more prolonged the stages were, the more creative they tended to become. Once the group had gone through the cycle of forming, storming and norming, the performing stage was settled into with an open frame of mind. Now, given that some of the stages were tackled on different occasions, the ratio of ‘performing’ to the rest of the session was relatively small. So, the optimum time for being creative was clearly not always reached for this group. Limbering up exercises, prior to each stage, might have accelerated the group formation cycle and the creativity peak climbed sooner.

This concludes presentation and analysis of the Problem Solving Mode for the case study with Hull CVS Development Team; a Mode which dominated the intervention. It was some months later, with critical creativity partially developed in the meantime, when I returned to this case study in the Critical
4.0 Critical Reflection Mode

The Critical Reflection Mode has been introduced in the previous chapter as a Mode in which future practices can distinctly benefit. There is the opportunity to reflect on the adequacy of the method used in Problem Solving and on its output. Inquiry is encouraged over whether a more appropriate choice of approach could have been made, in the light of the creative potential which was reached, and the acceptability of the outputs. During analysis of the phases of the Problem Solving Mode there was clearly evidence of reflection. It is not intended to isolate reflective activities from the rest of the process. This Mode merely serves as a channel in which to concentrate reflection.

The three phase cycle of this Mode brings the following tasks. The Creativity phase (itself a creativity node, N9, and supported by node N12) begins the Mode with the intention of surfacing as much information as possible pertaining to the activities in the previous Mode. Next, the Choice phase guides practitioners in their thoughts about the use of this information with energisation by creativity node N10. Thereafter the Implementation phase, involving N11, is the point at which any new learning is incorporated into future practice.

With an awareness of the four key principles of critical creativity, I was more sensitive about working in a systemic, participative, reflective and emancipatory manner in this Mode. Hence, the heavy emphasis placed on analysis in the Problem Solving Mode is not quite so evident here. Even so I have still, in part, separated the analysis from the practice. It should still be remembered, however, that I am sharing reflections and analysis for this particular instance. I am not intending these details to be carried into a general all-purpose method. Critical creativity is not to be practised as a method; it
4.1 Surfacing Issues for Reflection

Although this Creativity phase had not been deliberately followed at the time of the intervention there were certain aspects bolted on to the implementation which were particularly relevant to the Critical Reflection Mode. Feedback sessions are one example.

4.1.1 The Generation of Issues

It was beneficial to invite several parties to contribute to the generation of issues. Even though, in a few minutes of solo brainstorming, a long list of issues relating to the methodology and its outputs had come together astoundingly quickly I was modest enough to know that the list was by no means sufficient. Not only was the time lag a hindrance to my thinking but so was my perspective. It is difficult to be completely openminded in reflections surrounding a project for which you assumed absolute responsibility. A richer supply of issues was sought.

Both during the exercise and immediately after, the Development Team had offered their feedback. In their scheduled group meetings and in a ‘wrapping up’ session they had expressed their feelings on the state of play. Fellow researchers had also inquired on progress at various times and raised issues of interest for them and practitioners had been inquisitive about my activities. Friends too, from outside of the discipline, had provoked reflection on aspects. So, a wide range of areas of interest and concern had emerged.

4.1.2 Issues Generated

As said, many issues pertaining to the methodology and to the outputs were generated from a variety of parties. Comments, queries, pieces of advice,
criticisms and so on were abundant. Rather than present them simply as a list of issues or as a transcript of the interchanges which took place, I have restructured the issues in the following paragraphs so as to bring more coherence to them. There is discussion of the benefits which were experienced as a result of the SSM application, of the factors which assisted progress and those which created difficulties.

To start with the benefits then. Speaking specifically of the benefits to the Development Team, it is likely that their full extent was not appreciated even in the short and medium term. Recalling the principles of this methodology, the benefits that have emerged should not be too surprising. Immediate examples included a distinct increase in confidence of the team once they had a framework from which they could justify their raison d'être. The team gained strength from the knowledge that the projects which they would now undertake had been rigorously examined and assessed for 'suitability' from an agreed set of criteria.

Tackling a discrete task together has helped the group of individuals accelerate their team development efforts. They are now more aware of each other as individuals, of the roles they undertake and of the strengths and limitations of the team. As the team becomes even more established their meetings will probably provide a forum for more challenging and indepth inquiry of each other's work, rather than the confirmation of initiatives which it currently tends to give. In particular, there has been a reflective appreciation of each other's value base and life experiences. Such appreciation, coupled with the attributes of a more cohesive team, will probably aid their future response to a problem.

The luxury to 'take time out' to reflect on themselves and their work has been an aspect frequently commented on. This exercise gave the opportunity to
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withdraw from the situation for contemplation. One might be tempted to suggest that this ultimately brought another problem to the team, since two people left the organisation during the course of the exercise to pursue other challenges. However, I do not consider that their actions were a direct result of applying SSM. Nevertheless, it was hoped that the positive aspects experienced by the two individuals on moving into their chosen positions would outweigh any short term losses felt by the remaining team.

The team has introduced a new item, SSM, to their ‘problem solving tool kit’ which, even if not used in its entirety still has the potential of bringing new insight and novelty to a situation. Hull CVS has not yet shared the methodology with another community group; that is for the future. However, the resultant framework (appendix IV) has been modified and passed on to another organisation as an aid for optimising their allocation of funds.

Now, speaking at a personal level, I gained much from this intervention. It has, without question, confirmed my belief that systems approaches ‘have a lot going for them’ and that they can both be made accessible to and used to good effect by non-specialists. Not only was I able to relive some of the difficulties experienced by newcomers to SSM and thereby be encouraged to reflect again on the process and its theoretical base, but I was also able to appreciate the difficulties in attempting to pass on a small part of such a specialist subject area. Thought had to be given to the terminology employed, the depth to which aspects were covered and the style of presentation, in order to retain the audience without inhibiting their application.

Participating in an activity which, by its very nature had to take into account work of a wide variety of voluntary and community groups (many of whom are oppressed and discriminated against), has initiated an exercise of
critical self-reflection during which I have been forced to question my own values and beliefs, along with their underlying assumptions. A worthwhile byproduct, one would suggest, of the main exercise.

It has to be said that no-one knew what to expect from this project; we were all entering the unknown. However, one can recognise certain factors in the organisation which obviously aided the progress. To begin with, individual team members were able to schedule their own work and, since they recognised SSM as a priority, they were able to allocate a space for it in their busy timetables. Another advantage was that the nature of CVS’s work is akin to the nature of problem solving. This meant there was not the pressure to present an immediate ‘end product’ which production oriented or profit making organisations might have demanded.

Looking more closely at the participants, there are more factors which assisted the project. The Organisation Coordinator is a member of the Development Team and was therefore actively involved in the exercise. He backed the commitment from his staff and supported their efforts. Also, the character of the people involved is open-minded with a desire to improve such factors as their work environment, job satisfaction and standard of performance. They are also highly intelligent and self-motivated. Finally, and this factor embodies much of what has already been mentioned, the ethos of CVSs is one which appears to encourage empowerment.

Although the overall result of this exercise was most beneficial to all parties, it would be unrealistic to avoid mention of some of the difficulties which were experienced. The change in the group’s composition, as a result of the resignation of two members, influenced the remaining members significantly. There were positive and negative reactions stirred. The
resignations generated a new urgency for reaching an improved situation but they also unsettled the remaining team members. Another difficulty was in the planning of events. The scheduling of meetings, so as to maintain a reasonable level of commitment and continuity without impinging on valuable time, was not an easy task. Although it would have been useful to have more opportunity to reflect between stages, the impetus had to be retained. Thirdly, the building of the rich picture could have proved to be a sticking point since its lack of individual ownership lent itself to continuous review and criticism. The group's turbulent environment did not assist matters, since the picture was never considered to be up-to-date. It should be stressed though, that the cycle became more creative and more meaningful, as time went by. The team had formed stronger relationships and, perhaps, felt more comfortable in this set-up as stages were undertaken.

In summary, I could talk in terms of the success of the intervention. All the members of the Development Team say they rate the whole exercise as being a success. With an agreed valid means of assessing the projects on which they work the members are appreciating firsthand the benefits of their efforts. This is not to say that they would not have reached a similar state without this exercise, but it would undoubtedly have taken a much longer period of time. As one member confided in me, 'the involvement of an external facilitator brought the required momentum to see such an exercise brought to a conclusion.' Once we were satisfied with the major step of deciding which methodology was appropriate for this situation, we were committed to being faithful to SSM. Adhering to SSM's underpinning principles no doubt secured the emergence of the aforementioned outcomes.

I rated the use of SSM a success also, because I was able to recognise the value of the principles being reinforced as the process went along. For
instance, the cohesion of the group served to demonstrate the dominance of the culture metaphor, the strength of commitment to the project was an indication of the participative element, and the novel insights emphasised the new learning and understanding which had emerged.

4.1.3 Analysis of Creativity Phase

The generation of issues occurred at a creativity node N9 and while there was an effort to build an atmosphere which welcomed feedback of any nature, the generation was not overtly promoted by creative thinking. Aside from the solo brainstorming, no creative technique had been employed to free hidden thoughts. N12 could have initiated this action. However, there was quantity and quality in those issues generated even if they had targeted similar points.

Receipt of feedback had occurred at staggered intervals - during the exercise, shortly after and, currently, a long while after - and gives a more holistic representation in terms of time and the impact of the exercise. Additionally this kind of information collection gives the option of monitoring changes in view over a period. The method of collecting information could have been equally holistic had a variety of means of receiving feedback been tried. Questionnaires, group discussions, social events and other mechanisms might have produced a more balanced set of data having taken account of individuals' preference for a medium of communication.

Having presented the Creativity phase of the Critical Reflection Mode, I now go to the Choice phase and see how the information was managed.

4.2 Managing the Feedback

Given that the issue generation had been rather focussed, the
management of the feedback was relatively straightforward and did not employ node N10 at all. Little creativity was unleashed. The very fact that I interchanged with people who I respected meant that I valued all the comments; this meant I was going to use all the feedback - a rather close minded approach and not in the spirit intended.

Had the issue generation been more radical, then its management might have needed creativity. In deciding what were priority issues or issues grounded on irrelevant substance a journey round the recursive loop could have been required.

4.3 Utilising New Learning

The Implementation phase of the Critical Reflection Mode utilises the new learning developed from the previous phases. Such new learning can be seen to be included in an exercise undertaken with a private utilities company. This is related in Chapter 8 where the new learning moved me much closer to fully operationalising critical creativity.

5.0 Critical Review Mode

I adopt a similar style to previously and begin the section with a short recap of the Mode in focus. There will obviously be less information to impart about the practice of this Mode, but its omission can not go unstated.

The Critical Review Mode aims to guide the practitioner in a critical exploration and appraisal of candidate methods allied to creative thinking which can be taken forward into the Problem Solving Mode. So, the three associated tasks from the phases within this Mode are, firstly, to look critically and creatively at methods which may be capable of evoking creative thinking. The second task is to creatively assess each proposed model in terms of its ability to
stimulate creativity. Finally, the Implementation phase asks for the taking forward of candidate models and methods into the Problem Solving Mode. Within this case study, such a review cannot be said to have been undertaken. Its absence undoubtedly had a serious impact on the whole intervention. As much as the other two Modes could have tried to make up for this severe handicap, without the Critical Review, the practice of critical creativity could never have been fully operationalised.

Right from the start of the Problem Solving Mode, the effect of the omission of a Critical Review was clear. The Choice phase of the Problem Solving Mode was particularly restricted; it was nigh impossible to have been creative in the matching of the situation with a methodology. Convergent thinking, as a result of the lack of diversity in candidate models was inevitable. In consequence, this put increased pressure on the Critical Reflection Mode to consider the suitability of the application of SSM by the immense number of issues which were generated. Overall, the two Modes which were practised were either seriously restricted (Problem Solving) or overwhelmed by their task (Critical Reflection). Guidance from the overarching framework unintentionally exaggerated particular phases through the imbalance of the process.

6.0 Summary

This chapter has shared the first stage of my planned fieldwork. It has also shared the conscious integration of the practical and theoretical aspects of the thesis - the praxiology. As highlighted in Chapter 2, PAR promotes such integration. While one cannot be certain without a control experiment, I put forward that the fieldwork was enhanced by the recognition of the mutual benefits that the theory and practice loop can bring.

Critical creativity was not fully operationalised during the intervention.
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with Hull CVS Development Team. The sharing of the case study material, structured through the TSI framework has shown that to be so. I have also shown that, although the notion of critical creativity was not fully developed at the time, certain aspects of my activities did indeed reflect some of its philosophical underpinnings. These aspects were acknowledged in analysis. The analysis has also highlighted the deficiencies in my approach and the resultant suppression of creativity.

While there were many positive outcomes from practising creativity within SSM, I put forward that the pursuit of critical creativity would have brought even more. In the next chapter I share a case study which supports this claim.
CHAPTER 8

1.0 Introduction

This chapter shares common aims with Chapter 7. In the same threefold approach, the relating of case study material in Chapter 8 serves to illustrate the ideas presented so far, to encourage analysis of my hypothesis and to make use of a practical forum in a testing and validation process. So, once more the operationalisation of critical creativity, guided by a process of critique embraced by Total Systems Intervention, is taken into a real context. The activities are described along with the thinking which supported them. As with the previous chapter, adherence to those three aims opens up feedback routes so as to further enrich the theoretical and methodological basis of critical creativity. Again, though, this case study should not be taken to be a general case. The very nature of critical creativity asks for each context to be considered in its own right; generalisations should not be made.

Although Chapter 8 is framed by these overarching aims and is an important component of Section III, fulfilment of its own specific objectives gives it the capacity to be self-supporting. Speaking further of these individual objectives, this chapter describes a case study in which critical creativity was explicitly pursued. A journey through the three Modes of TSI structures the telling of an intervention in which the context of operation was conscientiously held in focus and account taken of it. While it is impossible to revisit that context a second time and compare this intervention with one that did not include the critical nature of creativity, I put forward that there would have been fewer benefits and a decreased chance of success in such a revisit. As will be revealed, the approach based on critical creativity brought resounding acknowledgement of its value from all parties involved.
Divulging more of the detail of this intervention, Chapter 8 concerns a two day 'event' which was undertaken with a local public utilities company; the company is Anglian Water. The organisation had been, and still was, going through a change programme. In order to avoid drastic cuts in its manpower, one Department was endeavouring to make itself more attractive to the company as a whole. The Department was exploring alternative means of proceeding in their bid to secure external projects. Creativity had been recognised by their Manager as a useful attribute to enhance that exploration. Within the practice of critical creativity the extrinsic needs of Departmental members were satisfied but, in addition, various intrinsic qualities were ameliorated.

Extrinsic needs were satisfied through the learning of, facilitation of and participation in a range of creative problem solving approaches. Metaphors, idealised design and brainstorming are just three examples which were introduced. Each approach played a part in the overall scheme and could be taken back to Anglian Water without translation. Amelioration of intrinsic qualities arose from both intended and unintended consequences of activities. As will be shown, members of the Department managed to raise their self confidence and respect (self and mutual) to such a level that, by the end of the two days, they had confronted some of their internal politics and vowed to continue in their endeavour to establish themselves as a forward looking, progressive group.

Presentation of this intervention proceeds in the following way. Since I did consciously aim to practice critical creativity in this instance, it is natural to structure discussion through the three Modes of TSI. Comparisons can be made with the structure of Chapter 7; a more balanced presentation is the end product here with similar emphasis and effort given to each Mode and phase. Many of the insights generated by the SSM exercise with CVS were implemented in this case study as would be expected of the iterative nature of TSI. The new learning
gained from that exercise was taken on board.

So, this time once the scene has been set, the presentation moves systematically from the Critical Review Mode to the Problem Solving Mode. It concludes in the Critical Reflection Mode. In each Mode the three phases of Creativity, Choice and Implementation are described and analysed as critical creativity is shown to have been pursued.

First then, some background information is given. Again there is no need to burden the reader with excessive detail; pieces of the jigsaw will fall into place as the account proceeds.

2.0 Setting the Scene

Anglian Water is a profitable company which has responsibility for all water supplies and services in its designated region. Recent privatisation has presented the opportunity to pursue a strategy intended to increase its competitive edge in the open market at home and abroad. A massive change programme encompasses this strategy and represents a dominant feature of the company. Such an aggressive agenda greatly influences the operational climate. I use the programme as a vehicle to convey the tone of the wider environment of the group in focus. That done, I move on to the group with which I worked - a group within the ‘Dirty Water’ Department - and describe something of its role. To complete setting the scene, I write of the process by which I received the invitation from Anglian Water.

2.1 Strategic Systems Review

Anglian Water has been going through continuous change since 1994 in the guise of an initiative known as ‘Strategic Systems Review’. This programme has far reaching implications both in time and scale. A fundamental objective of the programme is to reduce capital expenditure. One means to this
end is to streamline staff; an option which had been taken. By the time of the
case study, staff levels had already been reduced by around a thousand, to two
and a half thousand. Most of these losses had been suffered at middle
management level but such a drastic reduction had created an unsettling
atmosphere for all employees. Thirty engineering positions (representing five
percent of engineering staff) had been lost through voluntary, rather than
compulsory, redundancy. A recent periodic review had suggested a further
slicing of capital by fifteen percent; there was a real potential of another one
hundred and fifty engineering positions being cut. Since all of the jobs in ‘Dirty
Water’ are engineering posts, this brought increased concern within that
Department for the future.

Intertwined with some of the seemingly threatening actions embodied by
the Strategic Systems Review there were other, more constructive, activities
directed at the personal development of employees. For instance, all
organisational members had been invited to participate in projects such as “The
Journey” - a venture led by external consultants intending to uncover personal
ambitions and recognise one’s route to self-actualisation. While participation in
such schemes was not obligatory, virtually all invitees did attend.

Even from this brief introduction, one can already sense a paradox in the
company’s behaviour. While there seems to be an inspirational overall view
from the Board of Directors - with respect to the Department, which will come
into focus, there was a strategy to be a major competitor in the international
market in waste water treatments - there is an underlying threat to individuals’
financial security and self esteem. To articulate this paradox within a theoretical
framework, it is useful to refer to Maslow’s (1954) famous hierarchy of needs.
I suggest that the Anglian Water engineers, in particular, were conscious of
having the first level of the hierarchy - physiological needs - weakened while
being expected to operate as though they were fulfilling their fifth level needs -
self-actualising needs. According to Maslow, a human being must feel sure that all lower layers of the pyramid are intact before being capable of proceeding any higher. So, there was pressure on engineers to be innovative in their advance in the market, but they did not have the confidence and security to be so. It was too risky.

Whilst there was perceived to be a current dilemma for engineering staff, some say that it had not been sprung upon them. Historical trends indicate a decline in the engineering function within Anglian Water. The previous thirty years has seen a gradual reduction in power and status for engineering. Operational responsibilities had been lost. Self worth had visibly deteriorated amongst engineers. A common emotive reaction from those caught up in this situation was that a deliberate attempt was being made to persuade engineers to move sideways, in promotional terms, into other functions.

So the group was operating in an environment of uncertainty and ambivalence. I now introduce the group itself and its function.

2.2 The Group

This case study is centred on a small team which goes under the name of the "Dirty Water Group"; not a very flattering title and one which was promised a face-lift, but a title which clearly defines the group's role. The role of this twelve strong team is to design schemes and plants which deal with waste water and sewage. Once the design stage is complete, a close association between this group and the appointed construction and commissioning staff is maintained until the scheme or plant is in service. Assignment of work is mainly on a project basis and predominantly within easy travelling distance of the Lincoln base. However, as said earlier, future plans include a move towards bidding for more overseas projects and relevant contributions to international contracts.
Having said something about the group which I proceeded to work with on creative problem solving, I now close this introductory section with an outline of how I came to be undertaking the case study. In reality the process of agreeing a contract was rather convoluted and extended beyond six months. Here I give the essence of the series of interactions.

2.3 Making Contact with Anglian Water

Acting on a recommendation, the Departmental Manager invited a proposal from a consultant in my sponsoring university. The proposal was to be based on the provision of guidance for achieving creative potential in the ‘Dirty Water’ group. Funds could be arranged for a two day engagement. Given my interest in such affairs, I was asked to partake in the work.

A proposal was developed which asserted that every individual was capable of being creative, that synergistic benefits arose from working in teams and that creative pursuits should be fun! We also stressed that creative problem solving is best undertaken with consideration to the context in which it is required to be useful. Therefore, a commitment to building a picture of the participants and their working environment, prior to the planning of any consultancy work, was essential. On that basis, we offered a two day training event in which these assertions would be proved and the holistic view of the Department would be taken into account. The proposal was accepted.

Now the introductions are complete I can move on to structure presentation of the activities in this case study through the framework of TSI. I begin in the Critical Review Mode and, start with a reminder of the aims of each Mode and the tasks from each phase.
3.0 Critical Review Mode

The intention of this Mode is to encourage and guide critical and creative exploration of methods and models associated with creative thinking which may be taken forward to the Problem Solving Mode. From the three phases of Creativity, Choice and Implementation the tasks are as follows: firstly, to creatively unearth a plethora of techniques which may be capable of stimulating creativity; secondly to assess each candidate method in terms of the aforementioned capability and, finally, to take forward suitable methods to the next Mode. So, now to look at each of those tasks with regard to the Anglian Water event.

3.1 Collecting Creative Methods and Models

In the preliminary stages of developing the proposal for Anglian Water my colleague and I spent time bouncing ideas off one another. It was a new venture for this partnership and neither of us were able to anticipate the other’s natural inclinations towards any aspect. So, from necessity we proceeded with an open frame of mind. In addition, the friendly nature of our meetings encouraged frank and honest exchanges. These factors clearly lent themselves to a more creative atmosphere than would otherwise have prevailed.

During such preparatory meetings a massive compilation of creative methods and models were uncovered and noted. From our own substantial repertoires we brainstormed in the region of about fifteen. Van Gundy’s (1988) collection identified more options and I managed to recall some from a recent American conference I had attended. In addition, conversation with a local management consultant brought to my attention a few more examples; these were primarily based on computer software. A diversity of techniques soon accumulated.

Our list included examples which extended over the full spectrum of
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levels discussed in Chapter 4. Besides the fast, effective creativity enhancing
techniques there were more prolonged, all encompassing frameworks as well as
natty games and puzzles. Equally diverse was the range of mediums and
equipment which would be utilised and skills which might be employed. One
would have found suggestions like role play, metaphors, the 9-dot puzzle, rich
pictures, morphological analysis, attribute listing and synectics on the list.

Having given an outline of the process of collecting methods and
models, I now consider how creative it was. Of course, direct reference could
again be made to Figure 2 as in the analyses in Chapters 6 and 7; here I avoid
the repetition of that type of presentation and let the analysis and reflections
flow less rigidly.

3.1.1 Analysis of the Creativity Phase

A creative and open minded attitude had been deliberately adopted for
this phase. Given our understanding of creative problem solving both my
colleague and I were aware of the benefits of being creative from an early stage
and behaved accordingly. Creative techniques which enticed us to elicit
contributions from many sources had been incorporated into the collection of
approaches, and a relaxed overriding environment had been strived for. Both
proved beneficial. The variety and extent of the output were measures of the
high creative potential attained.

However, it could be asked whether, had we known each other better
and been more familiar with one another's mode of operation, either of us
would have been more radical in our contributions. The beginning of a group
formation cycle does not often correspond with a creative phase, according to
Tuckman (1965). Maybe our professional relationship, with a high distance-
power dimension (Hofstede, 1980, 1994), also hindered the creative process. A
reduction in this dimension before participating in this case study may have
enhanced the synergy in our interchanges. That said, no one could deny the massive collection of approaches which were to be taken through to the Choice phase.

3.2 Assessing Candidate Methods and Models

When it was time to assess our collection of methods and models, we did not doubt their capability to stimulate creativity. If we did not have personal experience of applying them, then we relied on the credibility of their sources. All of the collection was positively favoured. However, there was a tendency to rank those which we had tried and tested ourselves higher than the rest. There was much security in knowing that the techniques had worked at least once for us already. On the other hand, neither of us had used computers for stimulating creativity and were rather wary of their proclaimed ability. The result of ‘sticking with the devils we knew’ was that the computer based examples found themselves at the bottom of the scale.

3.2.1 Analysis of the Choice Phase

Reducing our plethora of methods to those which were capable of stimulating creativity was undertaken in an unimaginative way. Creativity was not injected into the process. The two of us played safe and did not push beyond the boundaries of our assumptions. We stayed in the comfort zone of our previous knowledge and experience.

The process of assessment had been a pure paperwork exercise with no new input. A more creative process might have seen us practising those methods with which we were unfamiliar and trying out the computer based methods. We might have researched case study material and consulted with the participants to find out the possible effects of using specific techniques. Experiments could have been designed so as to grade the creative potential of each candidate. But that was not how we proceeded. Being open minded was
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not an obvious component of our assessment.

3.3 Taking Forward Methods and Models

The taking forward of methods and models for use in the Problem Solving Mode was an act based on convergent thinking. Lack of confidence in the computer based examples saw them excluded and those which we had not experienced for ourselves were put on a reserve list. We were very conservative in this Implementation phase.

Having covered the three phases of the Critical Review Mode and identified where creativity was abundant and where the process was starved of it, I now move into the second Mode - the Problem Solving Mode.

4.0 Problem Solving Mode

A reminder of the aims of the Problem Solving Mode tells us it means to provide guidance in the employment of creative techniques. The cycle of Creativity, Choice, Implementation starts by asking for an exploration of the situation in which such employment was to take place. This is followed by a choice of the most appropriate methods and models for the context of operation. Finally the chosen approach(es) is applied. The three phases proceeded in the following manner for Anglian Water.

4.1 Exploring the Situation

Exploration of the situation occurred in two episodes. There was an initial exploration immediately after agreement had been reached on the contract. This enabled the planning of the two day event to go ahead. However, a second more creative and participative exploration was undertaken on the first morning of the event. (Although I am jumping ahead slightly now and making reference to the Choice and Implementation phases, I disclose that the precursory activities to the two days had been chosen so as to both limber up participants
and to surface more of their circumstances.) Fortunately, this second exploration served to verify the original findings and gave reassurance of the appropriateness of the scheduled programme. No significant new insights concerning the situation had been brought to light so no drastic changes needed to be made to our arrangements. Therefore I do not concentrate on the exploratory phase carried out at the first recursive level of the Implementation phase. It is sufficient to have mentioned here that it did go on; the detail of how it was undertaken will come through in the Implementation phase.

I now focus on the early exploratory steps taken with Anglian Water's Dirty Water Group and relate my approach and the findings.

4.1.1 Lines of Inquiry

Once the proposal had been accepted, a meeting took place between the Departmental Manager, a representative from Head Office and myself. Anglian Water regional office was the venue. I soon realised that this was to be my only opportunity for exploration before the scheduled event. After the ice breaking formalities, the Manager explained the company's change programme and its repercussions in terms of the uncertainty it had created. His impressions of the group were then given. Keen to satisfy my insistence for finding out about the groups with which I propose to work, discussion was extended into a tour around Dirty Water's office environment and a preliminary introduction to each member and potential participant. The Head Office representative was a definite delegate for the event and was as unfamiliar as myself with the group. A supplementary purpose of this tour was to initiate a dialogue between him and the group members, thus reducing any unease which may be felt at the scheduled event.

Although such an introduction to a group might have sufficed on many occasions, in this instance another variable was encountered. The venue for the
event needed some clarification and exploration. Anglian Water own substantial training facilities with nearby accommodation and these were to be booked for the two days.

Consequently much of the information was gleaned from a two hour discussion with the Departmental Manager and short chats with each member. The Manager and Head Office representative were present throughout this exploratory phase. The two sources of information seemed to support each other. There was little evidence of contradiction and I managed to learn a lot about the whole situation as we shall now see.

4.1.2 Insights About the Dirty Water Group

I found the group composition to be interesting in several respects - from their various birthplaces to their consistent high level of technical skills. It was a multi-cultural group comprising eleven men and one woman. Countries of origin included Nigeria and Hong Kong, while Wales and Ireland featured too. The age range was fairly narrow with the average being around thirty years old. More than half of the members held degrees, many in civil engineering, and the others had been awarded at least an HNC. Several individuals were continuing their academic studies in the form of day release courses and others were following professional qualifications with the full support of Anglian Water.

As with the CVS team, this group was not long established. A couple of people had been with the company for a substantial period of time, but the majority had only joined ‘Dirty Water’ in the last year or so. Indeed, the present Department Manager had taken up his post just six months earlier. According to this Manager the group was not suffering from any internal politics or conflict, not obviously at any rate. Indeed, he described his team as being made up of “natural introverts who were quiet and not very open”. However, he did admit
to noticing some recent unrest and presumed it to be over the possible redundancies.

The coherence of the group might have stemmed from the matrix structure in which they acted. Three Senior Engineers were accountable for the progress of projects but very much depended on the cooperation and enthusiasm of the remaining individuals for the smooth running of operations. Even though project teams were flexible in formation and an individual was generally a member of more than one team, there was some tribalism evident in the group’s behaviour. This tribal tendency was reinforced by a physical split in the positioning of members in their office; a split which had initially been brought about by the ground layout, but there had been no attempt to reunite splinter groups.

Information regarding the booked venue again came from all those with whom I had met as well as from brochures I had managed to collect. The general feeling was that Whitwell Manor was a haven for training and development. It was considered a privilege to be invited there. Its private and pleasant location with high standard of accommodation make it an enviable asset. In the grounds of Whitwell Manor stands a collection of renovated barns which provide a range of syndicate and seminar rooms on the shores of Rutland Water. One large room and two adjoining rooms were for our use. In addition to the buildings, other facilities include a Land Rover, wet suits and an obstacle course, all being available to our party if required.

That concludes the initial explorations with Anglian Water. I now analyse the extent to which they were creative.

4.1.3 Analysis of the Creativity Phase

As hinted at in the introductions, with hindsight, I felt that this stage
could have been much more creative. Although partially excused by the severe
time constraints and the subsequent lack of preparation for the exploration, there
were modifications which I could have made ‘on hoof’ to enhance the level of
creativity. However, since I was fully aware of the notion of critical creativity
prior to this case study, I was very much aware of the type of information
which would be useful to surface in this phase. In fact, the second exploration
proved the information gathering to have been thorough and accurate, even if
not collected in a highly creative manner.

Apart from being conscious that I had not made use of any creative
methods within the exploration, there were two other major concerns I had with
this phase. Both of them centred around the Departmental Manager; both proved
unfounded in the final reckoning. It is these concerns which I convey as part of
the analysis. The first is related to the speed at which the exploration phase had
been undertaken. Within about three hours it was over. The impromptu manner
in which it occurred meant I did not know the allotted time scale and therefore
was not able to plan the best use of the time. Consequently, two of the three
hours had been spent with the Departmental Manager, a fact which suggested to
me that his perspective may have been allowed to colour and dominate my
findings. An equal input from other perspectives might have eased these early
worries and brought a better balanced and more divergent view.

Secondly, I was unsure whether group members had been able to
contribute honestly and openly to this phase. Relating to one of the principles of
critical creativity, I asked if I could have classed their involvement as ‘genuine
participation’? The Manager had featured in all exchanges but, without being
fully informed about the Manager - subordinate relationship, I did not know if I
was justified in wondering whether his presence had inhibited some people.
One-to-one discussions might have been less inhibiting and more creative, but
they had been impossible to organise in the time available. The best in the
In retrospect, my worries had been unnecessary and my criticisms a little harsh, but that was due more to good luck than judgment. Intuitive behaviour had dominated and saved the day. So, having told of the exploration of the situation I now go on to talk of the process by which the choice of approach(es) was made.

4.2 Making a Choice

In this instance, the Choice phase had many variables to take into account. Tabulating attributes of methods and models brought from the Critical Review Mode, intending to match them with parameters from the context of operation, was not a realistic exercise. It would have been a mammoth task and the resultant table probably incapable of coping with the complete picture. In addition to the increased number of variables, the expectations of this event were not as straightforward as for the hypothetical example or the CVS exercise. The Choice phase was rather more complex.

The complexity stemmed from several issues which had been disclosed in the Creativity phase. I now show how they influenced the Choice phase. To start with, there were various stakeholders - I was interested in testing my hypothesis, the Departmental Manager aimed to prove that he was working within the overall company policy, the Head Office representative had a personal interest and the group wanted to improve their profile. Therefore we all held a biased interest. It should also be admitted that this was a paid engagement, another factor which can influence relationships and behaviour. However, in terms of the Choice phase, we had ensured that the contract would not limit the methods and models we could include.

In addition, there was nothing to be gained by increasing the level of
uncertainty and associated fear already evident in the company. I saw a need to instil confidence in the group; confidence gained through recognition of their abilities and through genuine bonding if possible. With increased value of their self worth and in their identity as a group, there was an underlying hope that ‘Dirty Water’ would eventually take the initiative and start planning its own future. Ackoff (1986) conveys the message, “plan or be planned for”; my colleague and I secretly desired to impart this message during the course of the event.

Another issue which influenced the Choice phase was that I had not been able to identify any problems during the Creativity phase, which the group could usefully tackle in the two days. The Departmental Manager had been unwilling to offer any suggestions. Since our norm was not to work with scripted case study material, there was an urgency for uncovering problems which affected all participants. The assumption was that by tackling current organisational problems the chosen methods and models would gain credibility and the organisation would move forward. We were therefore aware that the first morning, at least, would have to be spent creatively exploring the group situation so as to surface problem situations to which all could relate. This clearly narrowed down our choice of approach for the early part of the programme.

Once a problem, or set of problems, had been surfaced, the plan was to then use the output from one technique in the next. This would retain the relevance of the subject matter and dismiss any misconceptions that creative approaches could only be used in isolation. It would also support the unpredictable and spontaneous nature of creativity itself! This cascading effect of chosen methods evoked a sensitivity towards their order of application; a distinct difference from one to another was worked towards. Ideally, an example from each level of focus included in the taxonomy discussed in 210 Critical Creativity with Anglian Water
Chapter 4, would be included. Another important issue impacted heavily on the ordering of methods and models. We had a belief that a cycle of idea-image-reflection would be usefully incorporated into the structure of the event and endeavoured to do just that.

The engineering background of participants was another serious consideration in the Choice phase. It was an aspect on which we could build during the confidence boosting periods, but we were also conscious of wanting to take the group out of their scientific mindset and move them into new ones. In doing so, more of their assumptions would be challenged. This scenario indicated to us that the chosen approaches for early in the day could be ‘harder’ while the later ones could be less so. This issue had an impact on both the choosing and scheduling of methods and models to be used.

When intervening in more straightforward scenarios - to my mind that is when a problem situation has been surfaced and when time is not restricted to two consecutive days - then issues such as the facilities, the skills of the facilitators and the participants’ past experiences of problem solving approaches would have been emphasised more. In this instance, while they were taken account of, they took more of a back seat than first anticipated.

In the end, a choice based on intuition and calculation was made that included creative approaches which were both compatible with some of the above issues and yet capable of challenging others. The chosen schedule was as follows:

Nine dot puzzle
Adding numbers
Tangrams
Nominal group Technique
Brainstorming
More detail is found in appendix II. The distributed programme more clearly communicates the build up from working separately to working in pairs, then from working in small groups to working in larger groups. It also shows how, by starting with mathematical and logical puzzles (albeit in different mediums), we promoted an atmosphere of security in the early stages. In later stages the participants were more overtly challenged when fewer engineering oriented approaches were applied. The build up to an outdoor reflective session is noteworthy.

4.2.1 Analysis of the Choice Phase

As has become apparent during the preceding description, the Choice phase was rather complex. In keeping with the systemic principle of critical creativity, I not only attempted to take into account those aspects which had surfaced in the Creativity phase but those which surrounded the approaches themselves. A diversity of issues was contemplated. Such contemplation could only have been undertaken with an open mind. An uncreative mind would have rejected the diversity. That said, it would have been easy to have been overwhelmed by the mass of information, consequentially suppressing all creative potential. So, the overriding atmosphere was one which was conducive to creativity - diversity and difference were encouraged.

Besides the systemic principle, the other three key principles of critical creativity were also paid attention. However, some were adhered to more than others. The reflective and emancipatory principles were foremost in mind during the Choice phase. Speculation of individual’s reactions to particular exercises helped me to focus on maintaining and increasing their ability to
realise their full potential. Surprisingly, in hindsight, the participatory principle was almost invisible during the choice process since I assumed sole responsibility for the phase. Circumstances meant that my colleague was out of the country and the complexity of the scenario deterred me from explaining it to third parties for their input. I acted alone.

As with most creative processes, inevitably there had to be a convergence of thought by the end of this phase. A choice had to be made. In this instance, the convergent stage was not quite so stark as there was no restriction to a particular approach. As explained, that did not befit the situation. The interconnectedness of one approach with another - in terms of its output, group requirements and use of medium - brought a more holistic choice which displayed great variety.

Once the selection of techniques had been made, it was time to move on to the Implementation phase.

4.3 Applying the Chosen Method(s)

While the contracted Implementation phase took place over the scheduled two days, the whole phase probably spanned ten days. Eight unscheduled days were taken up with preparations and represented a culmination of understanding of creative studies. This culmination operated through the second level of recursion (ie through the cycle which incorporates node 7). As with the production of a play the secret of successful Implementation was in these 'behind the scene' activities. Construction of props, rehearsal of lines, printing of notices, drawing of overhead projection slides and designing of posters were all important jobs, even if they were undertaken out of the limelight. They were key to a smooth performance, helping to create the intended ambience and allowing the actors to concentrate solely on their relationship with the audience. I will not focus here on the
painstaking tasks which were carried out; as with the Creativity phase, I am deliberately retaining a constant level of recursion for the Creativity, Choice, Implementation cycle. Even so, the outputs of this intensive period will be identified during the discussion of the scheduled two days and the importance of such preparation cannot be overstated.

So, I now give an outline of the Implementation of this two day event in the Problem Solving Mode. Components pertaining to the physical setting and to the leadership style are emphasised. The steps of the individual techniques were carried out as described by their originators, hence specific reference is only made to them by way of illustrating the importance of the aforementioned components.

4.3.1 Physical Setting

A physical setting can enhance or detract from the event which takes place there. Pleasant, bright October sunshine provided the backdrop for Anglian Water's event; an aspect out of human control but an outcome which was very welcome. Optimism, warmth and a carefree holiday mood shrouded this adventure; a contrast from recent dismal rain. Consciously aiming to continue those three themes within the development of an environment which would encourage creative thinking, or at least would not suppress it, modifications, where possible and appropriate, were made to the given setting. Although the light and airy accommodation conveyed the feeling that one would not be inhibited there, attention to subtle details brought that message home more emphatically.

As mentioned before, there was one large room and two syndicate rooms for our use. The space of the former gave us the opportunity to explore different layouts for desks, various seating arrangements and a range of focal points. For instance, two facing, parallel lines of desks formed the initial
position while semi-circles of chairs were favoured for later sessions. Conversely, the intimacy and comfortable furnishings of the smaller rooms gave participants homely enclosures in which to release ideas and know the ideas would not, metaphorically, drift away. They would be contained. By the end of the two days the notion of imposed, internal settings was completely disregarded as participants were invited to find surroundings which were conducive to their own creative thinking. There was *carte blanche* to explore the grounds of the manor and settle in a place which inspired them to relate to their work situation. The nearby boating lake, renowned drought garden and prosperous trout farm were three choices.

Returning to the indoors, colourful posters decked the walls of the large seminar room. Their content added to onlookers' understanding of creativity, ranging from academic definitions to humorous parables. Sources of creative models and methods were illustrated, offering more theoretical foundations if desired. Not only were these posters aesthetically pleasing but they were informative at various intellectual levels. Their high visibility made them a prospective trigger in creative processes too.

Other striking pin-ups generated a more participative element. Three statements of commitment to creativity were positioned on the main entrance door. It was ruled that everyone, individually or as a group, entering the room was to recite these commitments - in an audible voice. Such recitation helped in recalling the purpose of the two days and engendered laughter (albeit somewhat embarrassed at first) before participants resumed the main proceedings. The schedule for the event was also displayed near the entrance; reference to it reminded all concerned of the overall structure. It was an aid to reflection and to looking ahead.

From a wider perspective, the environment of the allocated rooms
deserves iteration. Detail of external attributes of the training centre has already been described. At a more general level, the beauty and peace of Whitwell Manor added an unquantifiable factor. The close proximity of the quaint sleeping accommodation, with impressive hospitality, was another positive aspect in setting the tone. All in all, an idyllic site for creative studies.

**4.3.2 Leadership Style**

As we shall see, the style of leadership varied during the course of the two days. Adoption of certain styles is now discussed from two angles: via a look at the contrasting personalities we drew attention to and then at the purposeful roles we played in parallel.

While, out of the limelight, my colleague and I worked towards equality, there was a chance to play on our natural differences for the benefit of participants. Indeed, emphasising contrast was, at times, our strategy; yet we still complemented each other well. It was an intentional facet of our leadership style. Pursuing a theme of contrasts a little further, manifest examples included the presence of both sexes to say nothing of the difference in age, stature and reputation between the two of us. Contrived examples were based on the personalities we chose to play in the execution of some methods. There was the coupling of the jovial person and the straight during introductory presentations, and the 'arty' person and the scientist during the application of metaphors. Playing on such contrasts created disharmony and challenged paradigms. Viewed separately these personalities might be seen as creating an imbalance; viewed holistically they presented a more balanced picture.

The aforementioned stances were taken within purposeful roles. Both consultants began predominantly in the role of expert. On the basis that I needed to break the ice, I shared something of my knowledge of creativity via an amusing parable while my partner delivered a more formal talk. Our credibility
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Intact we gradually moved into the role of facilitator as brainstorming and nominal group technique were used to surface problem issues. As trust in the creative process developed and confidence was gained in the outputs and emergent outcomes of the approaches, we worked towards being an expert as we introduced each unfamiliar method and quickly becoming a participant in its application. By the time participants were ready to start the reflective part of the cycle, in the outdoor exercise, my partner and I were happy to be observers of the process and then share in the results. Members of the group had received the tools, developed their skills and found the courage to assume the leadership roles themselves for application back at Anglian Water within the two days.

A whole thesis could arise out of the role of the consultant in this exercise. I am aware I have used popular labels to describe much of our behaviour. The underlying message is that we intentionally strived towards encouraging the group members to use the methods and models for themselves on topics which were meaningful to them.

4.3.3 Additional Considerations

It is unrealistic to segregate aspects of Implementation. They are interconnected. Facilitation is topical and physical environment is something which is relatively easy to modify. Both have been discussed. Additional factors which I pondered and modified during this phase are as follows.

I am especially sensitive to the size of groups with which I operate. Our contract had stipulated that sixteen participants was the maximum allowed - the target group size for the longer exercises was Belbin's (1981) ideal of eight. However, even in the shorter exercises, as with Tangrams, the tables were strategically placed so that the eight participant were in close contact.

1 Belbin's 1993 version suggests nine since a specialist role has been introduced.
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An adequate number of refreshment breaks is important when applying techniques which rely on mental power. Although the image of a creative genius struggling away for days on a single problem (Gardner, 1993) is often portrayed, this negative slant on creativity could not hope to couch the enjoyment and fun predicted in our proposal. Quite often, participants and leaders felt energised after just a ten minute break. A change of physical environment and group composition brought about by a move to the refectory was a beneficial tactic to practise. Both brought new perspectives to conversation and thought processes.

Although the amusing parable was the first contact between participants and leaders for the two day event, there was a more evident introductory item after the corresponding formal talk by my partner. As well as mentioning domestic arrangements, I chatted about the aims of the event and how they were going to be achieved. Covering issues such as the experiential learning which they would undergo, the preferences for particular techniques which they might feel and the group compositions which they might face, this item was friendly but frank. So, some of the initial apprehensions could be relieved. It was also a timely opportunity for giving 'gifts'.

A whistle was the first gift to be received by all. The blowing of a whistle signalled that a criticism had been heard. Scoffing at an idea can deter the sharing of another one and limit creative potential. Whistles were a tool to eliminate judgement of ideas and allow a more creative atmosphere to prevail. A water bomb was the second gift. This is a device which, when squashed, will swell and eventually explode. Its explosion releases water up to a distance of about two metres. With one water bomb each, the participants had one 'life'; there was one means of escaping from an exercise if it was too stressful or unfulfilling. So, no person was trapped by the event.
Implementation did not only take place between nine and five o’clock. A social gathering on the evening of the first day sustained momentum and strengthened relationships for the following day. An informal setting, as in the bar or restaurant, for most encouraged the exaggeration of characteristics and group dynamics that had been previously conveyed. All shyness and timidness had long gone.

Understandably, dynamics changed as we altered group compositions with progression through the approaches. Since the theory did not tell us how to cope with hidden agendas or unspoken assumptions, we used a practical point of view. In essence, we relied on the creative approaches to raise issues which were obstructing the group’s way forward. Then the obstructions could be overcome. Thus the focus was removed from interpersonal conflict and onto common concerns. A much more positive attitude could then be adopted with no individual feeling personally challenged.

That concludes the additional considerations which I made during this phase. I now move on to analyse the Implementation.

4.3.4 Analysis of the Implementation Phase

It would have been less exhausting to have delivered our material in a formal presentation and then instructed delegates in a case study example to demonstrate its application. Adopting the expert role throughout would have been straightforward and kept my colleague and I in control. However, not only would such an uncreative style have been less exhilarating for all concerned but it would not have emitted the subliminal messages that our Implementation phase did. More attention is given to these in the Critical Reflection Mode.

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On reflection, this was similar to the philosophy behind Manipulative Display Technique.
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So, I will now review the creative aspects of the Implementation phase.

Creativity can arise from diversity; diversity arises from difference and quantity. Where difference was present, we acknowledged it; where it was lacking, we created it. Similarly for quantity. It is the creation of difference which I go on to demonstrate through our actions. The theme of difference infiltrated our behaviour. Each initiation of difference was spawned from critical reflection however. It was not there for its own sake.

The variety of settings which we engineered is an obvious example of inducing diversity. Operating inside and outside created difference, as did sitting at desks and slumping in comfortable chairs. Yet each change in setting served a purpose, namely of enhancing the current proceedings. The great outdoors provided a source of metaphors which described Anglian Water; the desks provided surfaces on which to undertake Tangrams. The relationship between technique and setting was just one interconnection in the whole picture.

Using different mediums for introduction to methods and models similarly effectuated diversity. While the methods and models themselves utilised their own range of mediums - ideas, pictures, language and so on - my colleague and I used slides, worked on flip charts and openly interchanged to assist in descriptions of techniques. Again, it was a rather subtle action but nevertheless may have impacted on someone's subconscious.

Another issue relating to the presentation of techniques is the fact that we made sure we used both ends of the room. A simple idea it may seem but it is rare for presenters to move around their audience. In this instance, one end of the room was raised and was clearly intended as a stage from which to deliver rhetoric. The temptation to use it for its intended purpose was resisted. Such expectations from participants were not met. An element of surprise and novelty
Finally, as said, my colleague and I deliberately expressed different attitudes and temperaments during the course of the two days. Indeed, some of the moods were interpreted as having been genuine! Again, this diversity stimulated a range of responses and feelings amongst those present; another strand of experiential learning.

It would seem that the Implementation phase was indeed creative, but that the creativity stemmed from critical and systemic thinking. The pursuit of critical creativity was still in focus. The creative aspects were valued since their context of operation had been taken into account.

I now move out of the Problem Solving Mode and into the final Mode to examine the activities therein.

5.0 Critical Reflection Mode

The third Mode of TSI - the Critical Reflection Mode - is a juncture at which reflection on the suitability and effectiveness of the methods and models employed in the Problem Solving Mode is explicitly invited. An abundance of information related to the activities in the previous Mode is intended to be surfaced in the Creativity phase. Then, in the Choice phase, practitioners are guided in their thoughts about the use of that information. The Implementation phase is the opportunity for new learning to be incorporated into future practice. It is those three phases which I now explore.

5.1 Surfacing Issues for Reflection

From the lessons which had been learned with the CVS group, I was more aware of the importance of feedback. At a general level, feedback was a part of our own learning cycle; it could also provide major contributions to the
development of critical creativity. Not only was a variety of sources useful for bringing a range of interpretations of issues but a time staggered feedback process could be equally fruitful. A comparison between reactions during the process, feedback shortly after the event and long term feedback would be able to show if opinions changed with time. Deliberately building the feedback mechanisms in this way suggested a more thoughtful approach. Wider and deeper information was predicted, ultimately earning greater credibility and validity for the activities. The sources included my colleague and I, the Departmental Manager, the Head Office representative and the Dirty Water team members. All were invited to feedback at each time interval.

The nature of the feedback processes differed. Earlier ones, that is the ones during the actual two day event, were much more spontaneous and less formal than later ones. Instinctively picking up first reactions to a situation needed no preparation. Casual conversation over dinner also relayed a story. The important thing was to receive information with an open mind. An example of a more formal process was an arranged meeting between the Departmental Manager, the Head Office representative, my colleague and me, a couple of months later. Another example was in the shape of a questionnaire (see appendix III) which was distributed to all participants about four months after the event.

It is honestly recorded that the feedback received at any one time interval corresponds with that received at any other. Even to this day I hear the comment that "it was the best training session we have been on!". Although rather immodest of me to include it here, the following description of the outcomes of the event probably justifies the expression but articulates it more eloquently. Expectations such as the learning of creative problem solving approaches, experiencing the fun element of creativity and the synergistic properties of working in groups were fulfilled. These were all identified in the original
proposal, therefore I do not emphasise how they featured in the feedback. I highlight the more surprising issues here but do not acknowledge individual sources. The first few items relate to domestic matters. The rest relate more specifically to the application of the creative techniques.

Anglian Water training events, as has been since learned, are normally of a standard routine. Twenty minutes presentation from the trainer is generally followed by twenty minutes of group work. It was refreshing for participants to experience our varied format. Although the general schedule of the two days had been pinned up on the wall, the allocated times for presentation and group work had not been predicted. The nature of problem solving is such that it would be foolish to rely on strict timetables. So, it was novel for the days not to be broken down into forty minute blocks.

Another issue which was surfaced during this phase referred to my chosen introduction. Again, the Anglian Water format had been unknowingly, but fortuitously, disregarded. Instead of the typical 'pairs introduction' to the rest of the participants, I had started with a parable as an icebreaker. Fully aware that the group knew each other very well, there seemed little point in pursuing name remembering games. I preferred to settle us all in rather more gently and this had been appreciated by the majority of participants.

Speaking of being gentle, there was a minority voice which suggested to me that my colleague and I had been too gentle with the participants on the first day. We were guilty of being too sensitive towards them and did not challenge their thoughts on their organisation soon enough. It is interesting that a similar opinion was not expressed by the second day!

A final issue pertaining to domestic arrangements concerns the length of the event. There was overwhelming agreement that participants would have
benefited from meeting the evening before the main thrust of activities. It had been tiring to drive to the venue on the first morning and then participate fully. Time had also been taken to engage in progress reports on projects left at Lincoln. For the cost of an extra night's accommodation, full attention for creativity could have been given straightaway.

I now present other issues which were surfaced. These relate more to the intangible and unexpected outcomes of the event. The first example is the increased bonding between group members which went on and the way it occurred. With their background of uncertainty and fears of redundancy, the release of aggression and frustration about the system in which they appeared to be caught was not surprising. What was surprising was the unity which was recognised amongst the Dirty Water team members once they opened up to their true emotions. Perhaps, in their workplace, no one had shared their feelings and each individual had closed in on themselves. Sadly, although there was increased cohesion between team members, there seemed to be an equal increase in antagonism with the Departmental Manager. The relationship with the Head Office representative, as we shall see, became more interesting as the two days went on.

As more techniques were learned, the experience of new creative skills coupled with the group cohesion led to a bunch of people who started to reassess their worth. They gradually realised their value to the company and gained more self confidence and respect. By the end of the two days they had managed to explore their situation and had also managed to put forward ways of improving it. A much more positive attitude was assumed on their return.

Another lesson which was learned by all was the value of creativity. Most of those involved in the exercises realised that the proposals for change which had come forward, would not have done so through their routine
meetings. So, while there was admittance to some scepticism about 'messing about with creativity' before the event, they now appreciated its value.

Of the many creative methods and models which we included in the programme, one which deserves special mention is the metaphor. The power of metaphor in creatively exploring organisational life and surfacing proposals for improvement was astounding to all present. Of particular note was an example which the Head Office representative chose in the final, outdoor exercise. He selected the metaphor of a lake - the sailing school, the boats on the lake and those moored at the shore, the cyclists riding round the lake and many other attributes, all held personal significance for Anglian Water. The boats bobbing up and down at random were those Departments without a direction but with lots of enthusiasm. Boats moored at the shore represented the unused and restrained resources of the company. His presentation was so touching it brought a lump to a lot of throats. A spontaneous standing ovation drowned out his final words. Until that point, the gentleman concerned had been very much on the sideline of activities. At this late stage he was pulled into centre stage. One could predict a closer, and more sincere, relationship between Head Office and the Dirty Water group on the basis of this metaphor.

Another surprising outcome for me from the use of metaphor was the way in which it could reinforce one's culture. In one of the small groups I facilitated there was a boisterous Nigerian engineer. Never mind what metaphor had been proposed and was being developed, he always managed to introduce the concept of the family into the picture. Clearly the family is an important entity in his culture. This was an issue that I had not come across before.

A final example of a surprise which can be traced back, largely, to the application of the techniques came from the Six Thinking Hats exercise of Edward de Bono (1992). The techniques was intended to be used as a short
exercise for reflecting on the activities which had been undertaken. A different coloured hat represents a different way of thinking - for instance, a red hat represents thinking from the heart, a yellow one is for optimistic thinking and so on. While the actual method does not call for hats to be worn, I thought it would be fun to design and wear the coloured hats as reminders of where we were thinking from. The enthusiasm and delight for wearing such hats was amazing. My group was so enthralled with the hats that they had photographs taken in them and actually took the set of hats back to Anglian Water (along with their unused bomb bags!). Needless to say, this technique had a greater impact on the group than I had anticipated.

That concludes presentation of issues for reflection. Next, I analyse the process by which they were surfaced.

5.1.1 Analysis of the Creativity Phase

Several means of surfacing issues for reflection have been identified in the previous section. Utilising more than one approach and being aware of time lapses demonstrated initiative and commitment to the collection of issues. Collecting from quite a wide audience also emphasised the systemic intent. Speaking specifically of creative aspects, there were a couple of conscious attempts at surfacing issues which might have laid dormant if only one approach had been tried. It is these which I now introduce. While a questionnaire was developed and distributed to participants it did not prove to be very successful. I suspect this was due more to weaknesses in administration within Anglian Water than with the format of the questionnaire. So, on that traditional method I will not dwell.

The most creative approach was through the Six Thinking Hats method. Not only did the technique itself present me with some surprises, but the output from the technique was most informative. It was, by its very nature, well
balanced. There were comments from the heart, there were neutral, data oriented responses and creative ones. While the actual hats have been mentioned in one context earlier, they had a special place in this context too. Probably the hats allowed a touch of role play and detached the individuals from the comments they were making. Thus, there was less inhibition to relate less positive feedback.

The range of settings which we used when intended to stimulate feedback was also creative. Taking one away from the place where the event occurred often allows clearer focus on the activities which were undertaken. A new perspective is created. A different level of formality is created when adjusting the setting from the bar to an office in the university.

So, the surfacing of issues for reflection would appear to have been reasonably creative. There was plenty of discussion centred on the event. As said earlier, most of it was repetitious. The means of surfacing the issues did not change the outcomes. Each different source of information served as confirmation of what had been said before.

5.2 Managing the Feedback

It would have been easy to have been carried away with the euphoria of the event. We were careful not to do that. As much as we liked what we heard, we did not want to get into self-sealing prophecies. However, some thought still needed to go into how to sift through the feedback and decide which was relevant and worthy of retaining. It would then be taken forward into the Implementation phase.

The two leaders of the event - that is, myself and my colleague - had undoubtedly presented our perspectives of how appropriate the chosen methods and models had been. We could also assess the usefulness of the outcomes...
which had emerged, but with a limited insight into how they would actually work within Anglian Water in the future.

Similarly, the Head Office representative and the Departmental Manager could offer their own partial view. They were clearly in a better position to oversee any benefits once the participants returned to their regular working environment. Again, however, their particular personal stake in the programme had to be remembered. As a result of their personal agendas concerning creativity, however, another partial view was introduced. While my colleague and I interacted only with participants in our feedback processes, these two men went a little further afield and conversed with the company Training Manager. Her one-off reaction to the event was also noted.

The greatest quantity of information was probably received from the remaining fourteen participants. However, most of it only represented a short term response. Their longer term thoughts were to be fielded, in the form of answered questionnaires, by the Departmental Manager. Unfortunately he had moved position before organising their return to me. In ignorance of any hidden agendas from them (since they appeared to have been astoundingly open when undertaking the exercises), their feedback was probably regarded as the most honest and was highly regarded.

Therefore, the most emphasis was placed on the feedback from the team members. However, given the professionalism of all involved, there was none that could be ignored.

5.2.1 Analysis of the Choice Phase

While the Choice phase did not appear to incite creativity, there was plenty of reflection going on. Since there was little dispute between the feedback we had received, there was no real choice to be made. All the
5.3 Utilising the New Learning

The utilisation of new learning is not a discrete activity. New learning from the Anglian Water event will transpire into all future creative studies, consciously or otherwise. However, if I were asked to pinpoint actual areas of new learning which I predict would be foremost then it would have to be the attention I will pay in future to metaphors and their relationship with culture. Creative thinking is intended to challenge mind sets. As a facilitator I would aim to assist participants in leaving their cultural ‘baggage’ behind in metaphorical explorations. Culture could easily suppress creativity. But this is work for the future.

6.0 Summary

As with the previous case study, the Anglian Water event was considered to have been a success by all those involved. Of course one cannot make direct comparisons between the two cases. Different people were involved, different issues were dealt with, a contract had been raised in the latter case and there were different expectations. However, the research intent is the same for both sets of fieldwork: to explore the practice of creativity. TSI gave a framework through which to both guide and compare the practice while PAR gave the complementary strategy. The power of their combination is identified in the excitement, enjoyment and benefits which all parties experienced and in the theoretical contribution to the thesis.

The degree to which TSI provided guidance is offered as a measure of the extent to which critical creativity was pursued. From an overview position now, I put forward that the analysis of the Anglian Water event showed that critical creativity was actively pursued. Additionally, it was pursued on at least two levels of recursion of TSI. Aside from the creative intent - most of the
creativity nodes had been activated - the analysis also showed that much thought and exploration of possible consequences of my actions went into the planning stages. This continued during the execution of the schedule. Reflection was embodied in the process.

Adherence to the other three key principles of critical creativity - holistic intent, participation and awareness of emancipation and human awareness - were also evident. I had tried to take account of the whole picture - working environment, venue for the event, the group dynamics and so on, in order to both challenge and make compatible the creative problem solving approaches. While participation was via a signing up on the list, genuine participation could only be achieved through convincing the group of the worthiness and credibility of that which they were partaking. This could only be achieved ‘on the day’.

The event was enshrouded by a belief in human emancipation and awareness. It need only be admitted that the message we were communicating to this group throughout was that of Ackoff - ‘plan or be planned for! - and we stand accused of the final key principle of critical creativity.

As with the CVS presentation, the Implementation phase in the Problem Solving Mode appears again to be overemphasised. Perhaps this is because it occurs at the sharp edge. Implementation involves face to face contact with the client. It is often where any contract is measured as being satisfied or not. On the other hand, I put forward that the Implementation takes up more space only because there is more overt activity to share. The thought processes behind the other phases could have taken an equal amount of time and effort to progress but their complexity is difficult to relate on paper. So, I do not think we should become overawed with this Implementation phase.

So, while the pursuit of critical creativity can be thought of as aiding the
progress of this project and securing a more successful outcome, the nature of
critical creativity is such that the practitioner can never say 'Well that's the best I
can do'. Again it is the learning which comes from this intervention which can
be integrated into future projects. Indeed, I undertook one approximately six
months after the Anglian Water event with a national training board and
incorporated my past experiences and new understanding. It went exceptionally
well for all concerned!
SECTION IV

The underground springs of creativity that are welling beneath us, are waiting to burst forth and water the potentially fertile land of mankind’s experience.

L. Marsden, 1995

The Singing of New Songs, William Sessions Ltd.
CHAPTER 9

1.0 Introduction

Comparison between the processes of pursuit of creativity *per se* and the pursuit of critical creativity can be made from the case study presentations in Section III. Even if the comparison is not made in ‘like for like’ circumstances, meaningful insights can still be generated. In my case studies there was a difference in the amount of attention given to the Modes of Total Systems Intervention; there were different resultant outputs and outcomes. Engineering a ‘before and after’ scenario, for the development of my thesis, allowed any differences and similarities to be drawn out. The pressures of organisational life are unlikely to afford the opportunity to engineer the same scenario. However, without comparative case studies, it is difficult to know how one has fared in the pursuit of critical creativity. The absence of a control experiment removes any gauge of success, albeit a relative gauge. Another means of assessment is needed.

A system of evaluation and reflection could provide a structure by which one can discuss success levels achieved in the pursuit of critical creativity. Where sought after, an evaluation process could identify tangible parameters - meaningful yardsticks - by which performance could be measured. Objective measures could provide useful indicators for clients and consultants alike, offering a framework for the promotion of good practice. Equally, relevant intangible outcomes may be recognised and explored as a means to improved practice. It is towards that end that this chapter moves.

While Chapters 7 and 8 have shown that both evaluation and reflection are integral parts of the practice of critical creativity, this chapter discusses these ‘close sisters’ from an overview perspective. The first part of this chapter is
concerned with the evaluation of the practice of critical creativity. Upholding similar philosophical underpinnings to those of critical creativity and participatory action research, Love's (1991) method of internal evaluation is put forward as a complementary framework.

As said, reflection has been introduced in earlier chapters. An example of a more holistic, reflective process in which I used metaphors, is presented in the second part of this chapter. While a more quantifiable output could be more desirable to clients and consultants as 'evidence' that critical creativity is indeed improving organisational life, reflection provides a counter balance. Reflection ensures that soft issues are not lost amidst the hunger for hard measures.

So, I start by proposing a method of evaluation.

2.0 Evaluation Method

As with the extensive range of problem solving approaches, research methods and creativity techniques, there is a similar plethora of evaluation frameworks. In an earlier paper I explored several evaluation approaches, drawing out their strengths and weaknesses for particular scenarios (Ragsdell, 1996(e)). In TSI terminology, the Critical Review Mode has therefore already been undertaken and progression has been made to the choice phase in the Problem Solving Mode. So, I begin this section by introducing an overview of the process of internal evaluation and go on to say why it is my choice for use with critical creativity applications.

2.1 Introduction to Internal Evaluation

A cursory glance at the relevant literature seems to indicate that evaluation methods are following similar trends to those seen in problem solving. Reference can be made to Chapter 3 where different eras of problem solving are characterised; the recent participative era seems to be mirrored in
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evaluation sources. Reflective elements are also being incorporated. The last ten years or so has seen a move towards ‘internal evaluation’ as a respected evaluation approach. It is on that approach which I now focus and on Love’s (1991)¹ work in particular.

Internal evaluation is recognised as capable of being both an organisational intervention tool and an investigative method. It is regarded as comprising of a loop of nine major stages, as shown in figure 4. This approach is intended to form the basis of action for people who are independent of the program they are evaluating but who are not independent of the organisation.

This special relationship between evaluator and organisation persuades evaluators to focus their efforts on the concerns of managers within the organisation and to assume ongoing responsibility for the evaluation exercise. Although interesting ethical issues may be raised in this situation, the positive attitude of internal evaluation seems to annihilate any concerns.

With its conceptual roots clearly in exchange theory, internal evaluation lends itself to effective use in the evaluation of social programs. However, this is not an exclusive use. Depending on the requirements determined in the consulting process, this approach is equally capable of addressing quantitative or qualitative goal evaluation.

Having given an overview of the process of internal evaluation, I now justify its choice through a discussion of some of its attributes.

¹ Love (1991) in turn has referred to Schein (1969), Hudson (1987), Scriven (1980), Clifford, (1987), for instance, in the development of his main writing on internal evaluation. The purpose of this introduction does not call for the depth of detail which would acknowledge each of these individually. However, they are not forgotten.
2.2 Why Did I Choose Internal Evaluation?

Given that internal evaluation is a form of action research, as defined by Lewin (1946), it is not too surprising that it resonates so well with critical creativity. In Chapter 2, I highlighted the common strands between participative action research and critical creativity to illustrate their commensurability. Here I carry out a similar task for internal evaluation and critical creativity. Love (1991) himself, does not stress the following attributes of internal evaluation; I have surfaced them during my explorations of the approach. Highlighting some of the principles of critical creativity, a relevance - rigour debate of the Argyris and Schön (1991) variety is again followed.

2.2.1 Interdisciplinarity

Internal evaluation openly confesses to an interdisciplinary character. Its eclectic base declares that the method is not rooted exclusively in any theory or science. There is no supreme body of knowledge to draw from. Often utilised for evaluating social programs, internal evaluation understandably tends to draw significantly on behavioural sciences. However, systems, information and management sciences could equally be included in the process, along with many others.

2.2.2 Participative

It is generally accepted that an internal evaluator is responsible not only for analysing and developing recommendations, but also for the implementation of changes. Without genuine commitment and participation from the evaluator, this chain of responsibilities will not be satisfied. In turn, and promoted in part by the systemic nature of internal evaluation, genuine participation from all organisational members is likely to emerge. Cultural feasibility of changes is therefore not likely to be an obstacle.
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2.2.3 Reflective

Internal evaluation is intended to be an integral part of organisational development and design; this is in much the same way that critical creativity is intended to be an integral part of problem solving. Neither are intended to be 'bolt on' accessories. As a result, internal evaluators are very conscious about the context in which they are operating. This in turn can lead to a more reflective practice.

2.2.4 Systemic

The systemic nature of internal evaluation can be seen in various ways. I summarise three ways here. First of all, the evaluator is expected to consult and provide information to all levels of the organisation. This eliminates the temptation to adopt a single partial view and enriches the collection and dissemination of information. A holistic view is expected.

Secondly, Love's (1991, p4) comment that: “Instead of focusing primarily on the outcomes of a program for its participants, internal evaluation defines effectiveness more broadly to include factors such as equity, acceptability, and political rationality. ......... and factors that influence its performance, including its structure, operations, and management” suggests an holistic intent. The inclusion of all these factors indicates that a reductionist approach is not encouraged.

Finally, when one reads the reviews and case studies of internal evaluation, it is evident that this approach has been used in a wide variety of organisations. Not only has it been effectively employed in profit making ones, but also in non-profit making and voluntary groups. This fact reinforces an all-encompassing capability of internal evaluation. It also demonstrates a great operational flexibility through its awareness of the context in which it is being used.
Section IV

2.2.5 Iterative Nature

It is apparent from figure 4 that internal evaluation is not a once only event. Internal evaluation is a continuous cycle. Its iterative nature corresponds with that accepted in systems thinking - another common strand with critical creativity.

2.2.6 Creative

Its creative attribute stems from the understanding that internal evaluation is not a rigid framework and not a systematic procedure. Internal evaluation is a process which encourages openness, participation, reflection and systemic thought. It is also a cycle which allows the consultant to play a range of roles. Such a flexible process lends itself to generating novel and creative insights.

2.2.7 Summary

By drawing out the attributes above, it is clear that internal evaluation is not only complementary to management as a whole but is a useful companion to critical creativity. Its systemic, reflective and participative intents align with the key principles of critical creativity. Internal evaluation is also compatible with my overarching research strategy. It would appear to be the final piece of the jigsaw in the thesis.

Evaluation and reflection are closely linked. Having suggested a process of internal evaluation I now move on to structure a process of reflection, still from an overview position, through the employment of metaphors.

3.0 Metaphorical Reflections

As stated at the outset of this thesis, I practised critical creativity within the framework of PhD research. Creative techniques were used throughout the research activities, with their context of operation always taken into account.
The use of metaphors in this reflective stage not only stretches the boundaries of the PhD process but is also judged to be a valuable and valued contribution. For that reason, their insightful employment is now included. Clearly, in other contexts, different reflective tools might have been employed.

I have already mentioned metaphors as a useful holistic tool for exploration and analysis. In this section I demonstrate their power as I undertake metaphorical reflections on the case studies shared in Section III. The creative and insightful reflections of some of the work undertaken with the Hull Council for Voluntary Service and, later, with Anglian Water are presented as short stories. Each member of the cast represents a figure or feature in the real world.

3.1 Reflections on SSM with CVS

The metaphor of an English exam was used to explore the rich picturing stage of the Soft Systems Methodology application with the CVS Development Team. The cast is first given and the story follows.

‘THE ENGLISH EXAM [Literature NOT Language]’
alias
‘RICH PICTURING’ WITH CVS

Cast of Main Characters

<table>
<thead>
<tr>
<th>Examing Board</th>
<th>played by</th>
<th>Funding Bodies</th>
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<tr>
<td>Exam candidates</td>
<td></td>
<td>CVS Development Team</td>
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<tr>
<td>Invigilator</td>
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<td>Centre Staff</td>
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<td>Teacher</td>
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<td>Rubric</td>
<td></td>
<td>Soft Systems Methodology</td>
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<tr>
<td>Compulsory Exam Question</td>
<td></td>
<td>Rich Picture</td>
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<td>Revision</td>
<td></td>
<td>Preparatory Discussions</td>
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It was a winter morning and a small group of candidates was sheltering in the doorway of the exam centre. No one was enjoying the nip in the air and would be grateful when spring was in sight. The climate was so unpredictable these days: once upon a time there were long, hot summers and short winters, but now you were just grateful of the odd warm day and learned to cope with the extended cold periods. There wasn’t much that could be done about it. Wrapping up warm was one option, but wearing bulky duffle coats and ear muffs nearly all the time only seemed to prolong the winter. Summer had to come early this year - there was so much that the students wanted to do which was being prohibited by the weather.

The group huddled together for warmth. They were certainly a mixed bunch! There were a couple who were clearly apprehensive about what was in store, jibbering incoherently about the forthcoming exam. The others took little notice, used to their twitterings, but halfheartedly consoled them that everything would be OK. The majority were taking it in their stride for they trusted that their teacher had prepared them well for today. They also had a lot of exam experience and so were not unduly concerned. While a good result would be nice, it would not be the end of the world to fail. What would be would be! But maybe this was bravado. Exams do tend to bring out new dimensions in people.

Inside the exam room the invigilators were attending to the final details, making sure everything was ‘just so’ according to the teachers’ requests. Each
desk was laid out in exactly the same way - spare paper on the left, exam paper in the middle, personal identifier on the right. Each candidate was treated the same; no favouritism here. It had taken a huge effort to arrange the furniture the night before and, while a lot of thought had gone into the layout, there were obvious restrictions. The invigilators shouldered the responsibility well, proud to have been selected for this duty.

It was 9am precisely and the doors of the centre were unlocked. Eyes wide open, the first member of the group tentatively peered in at the entrance. Spotting a sign for the exam room, he breathed a sigh of relief. First hurdle over with. He signalled to the others to enter. They were overwhelmed at the sleek interior - very business-like. ‘Are we in the right place?’ they wondered. ‘It’s rather plush. We’re not used to this sort of environment.’ They carefully trod the route to the exam room.

The teacher observed her students as they came in. There were clear signs of tension on a couple of faces, and positive enthusiasm on others. Smiling reassuringly at them, she welcomed them all to find a seat. The more agitated ones sat at desks next to each other, others wandered into remote parts of the room wanting to be independent and to gain a level of privacy. All the students seemed pleased to be taking refuge in the warmth of the exam room.

There were signs of unrest. In their seats, the students started to jiffle and look around questioningly. Typical - nowhere to hang up coats. The teacher came forward, offering to hang outdoor clothing in the staff cloakroom for safe keeping until it was time to go but there was a reluctance by some to part with it. ‘Surely they weren’t going to keep wearing it!’ thought the teacher. She managed to coax a few of them to bundle their jackets under their chairs, out of sight if not out of reach, but sadly, none would let go all together. What a shame to be hampered on this occasion.
Silence! Countdown to the start. 3-2-1! The students turned over their exam papers. Was it horrific? Was it OK? The teacher was inwardly concerned for it was her probationary year, but she tried not to unsettle the students by letting it show. This was her first exam class and a lot depended on it. It wasn’t her personal rubric - but she had recognised its potential and had given it her signature of approval at the beginning of the term. Picking up a copy herself she read it through. How different it seemed from the last time she had seen it. There was one compulsory question. Too restricting a rubric, one might wonder, but too late to change now. It wasn’t going to be everyone’s cup of tea but they would have to persevere with it. It was what the syllabus had called for. They could be more creative in the English Language exam, not here - this was English Literature after all. The paper also seemed a little ‘foreign’. The language was a little stilted. Perhaps she should have changed the phrasing of the questions, so that it was more conversational. But, on the other hand, you had to use the terminology to gain credibility. It’s a fine balance. No good worrying now.

As anticipated, there were a few misunderstandings with the question. The teacher was called over a couple of times to clarify the requirements and to reassure bewildered students. A few more specimen papers for next year’s group, she noted. Not enough limbering up this year. Once everyone was settled, the teacher could retire to let the students get on with their task. They had read the set texts, they understood what to do, now they just had to crack on! Communicate the information to the examining board by writing it down on paper. And that is exactly what they tried to do.

Each student responded in a different way. A couple of them were panicking and hesitant in committing themselves to paper. They pondered the issues for a disturbing length of time while others had taken charge of the situation and were writing furiously. The two, hearing the flurry of pages,
became rather more agitated but eventually managed to force themselves into writing. ‘If only this was a maths exam,’ they thought, ‘We are better with numbers than with words!’ After the half way point, the rush of ideas calmed down and an obsession with attention to detail set in. There was a tendency to drift away from the gist of the question and get caught up on the purely descriptive side - the hearsay, the suspicions surrounding their chosen text. Leave that for the Language exam, we want facts here! There would be no extra marks for this extra effort. It would be to no effect. But it made the students ‘feel good’.

It didn’t seem five minutes before the invigilator was calling time. Time had flashed by. It does when having fun!? Amidst the usual mad rush to complete there was something of a sigh of relief. Everyone had worked hard. Heads were pounding. Three hours was enough, but even after that length of time there were still those who had to put down their pens with a feeling of slight dissatisfaction with their answer. There was another bit of information they had just remembered. Oh, well, too late I guess. Its over with.

Coats were grabbed from underneath the chairs and hurriedly put back on. Ready to face the winter afternoon, the students assembled in their cluster and chattered as they left. Significantly happier than when they had come in three hours ago and pleased with their inputs. They had been grateful to unburden themselves of their information onto the exam paper, and were careful not to compare answers on their way home. What was the point? It wouldn’t change things now.

Of course there was the post-exam and pre-results turmoil to contend with, but it wasn’t a particularly anxious time. Results were excitedly awaited rather than dreaded. Any urgency had been dispelled for some students - they were fortunate enough to have found jobs already (even before the summer term
began) so their grades were immaterial, for now. Others were content with the fact that they had done their best, and that was sufficient for them. They would give themselves a pat on the back, even if the faceless examining board didn’t!

The teacher had been slightly concerned about subsequent grades and the impact they would have on her group. It was difficult for her to let go, to realise that she would not be held solely responsible for the outcomes. Anyway, the result wasn’t of paramount importance, it was the learning and new understanding gained from earlier classes which mattered, she reassured herself. And as the months passed by, before the marking was completed, there was some reconciliation in that area. Almost forgetting her trepidation at receiving the results sheet, the teacher was looking towards her second exam class. Coping with her next batch of students kept her fully occupied.

A handful of ex-students had kept in touch with the college. Expressing their gratitude at having their eyes opened up for them in the Literature classes, they had told of how they could now relate the texts to their everyday life. The purpose had taken a long time to sink in but it had at last. So, while the students were more than happy with their progress, the teacher was making efforts to put into practice some of the thoughts she had had at the exam stage last year. This time, she vowed, when it was the exam she would do more to prepare her students: there would be more specimen exam papers; more tutorial classes. Maybe the rubric could even be altered. Instead of a compulsory question, there could be options - not everyone enjoyed the same text. And the exam venue required more attention. Being intimidated by the surroundings didn’t help you to concentrate on the task in hand; seemingly little things like where to hang your coat, really did make a difference. These were all things to be considered - but, then, is this what every year’s students would need or were these unique?
3.2 Reflections on Critical Creativity with Anglian Water

A different metaphor - that of a playground scene - resonated with me for exploration of the creativity event with the Dirty Water Group. Again, the cast of the main characters is shown and the storyline developed.

‘IN THE PLAYGROUND’
alias
‘CRITICAL CREATIVITY WITH ANGLIAN WATER’

Cast of Main Characters

<table>
<thead>
<tr>
<th>Role</th>
<th>Played by</th>
<th>Role</th>
<th>Played by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>played by Facilitators [Bob and Gill]</td>
<td>Children</td>
<td>Participants [Anglian Water]</td>
</tr>
<tr>
<td>Toys &amp; Playground Apparatus</td>
<td>Creativity Enhancing Techniques</td>
<td>Weather</td>
<td>Organisational Culture</td>
</tr>
<tr>
<td>Clothing</td>
<td>Official duties in the organisation</td>
<td>Trees</td>
<td>Sources of Creativity</td>
</tr>
</tbody>
</table>

It was a warm sunny day; ideal for children to play outside and run around without being hampered by cumbersome clothing. An excellent opportunity for the kids to fill their lungs with fresh air, flex their muscles and build up their stamina before the onslaught of winter. And a good time to have some fun! So, Mum and Dad offered to take them, along with a few of their mates, to the local playground. The playground had recently been overhauled. There were new bits of climbing apparatus, and other fixtures, for the children to try. A good idea, the parents thought. The old selection had been becoming a little tedious for this boisterous, adventurous group. However, when they noticed the looks of apprehension on the children’s faces with their nervous, quivering lips, Mum and Dad did begin to have doubts. Ah, well, best help the kids settle in!

Standing in the shade of the trees, Mum and Dad pointed out the bits of
equipment to the whole group. Luckily they had read a local newspaper article advertising the park and its new collection! It sparked some interest but, deep down, the parents knew that the children had to use the equipment to experience the sheer exhilaration that lay dormant. Some of the children had seen some of the equipment in other parks but hadn’t been entirely sure of what to do with it. They had tried to play on it but had soon lost enthusiasm and reverted to their old games of Tag(!) and rounders, if both a bat and a ball was evident in the group. Others were a little less confident, never even having heard of the apparatus. Even so, once Mum and Dad had suppressed any fears and, with both encouragement and excitement oozing, the children were keen to ‘have a go’. Mum and Dad looked at each other and nodded knowingly. The hard part was over. Now the children were committed to playing there would be no stopping them.

But that didn’t mean the parents could relax. Not by any stretch of the imagination - they had to make sure there were no casualties and that everyone had a fruitful time. They could recall their own times ‘in the playground’ and knew the dangers: the emotions stirred by gangs, the threats from bullies, the discomfort caused by changes in the weather, as well as the potential physical hazards from balancing on smooth, shiny poles and clinging on to slippery ropes. At least this playground had a rubber ground cover. Not all authorities are as safety conscious. And, besides which, Mum and Dad were here to look out for the kids. These kids would go home in one piece; maybe next time some of the older ones could take charge.

And so, the children played. And they really did play hard. Some swung to and fro, reaching new heights and seeing unexpected views. Others bounced up and down on the see-saw for long periods of time, not going anywhere but engaging in good humoured banter and discovering new sides to their partner. There were short spells spent on the roundabout after which
everyone, with head spinning and a loss of orientation, felt relieved to be on *terra firma*. There were also times when the trees were havens - away from the blistering midday sun the children could cool down, contemplate their next activity and even advise a friend on their next choice. It was funny how the trees weren't nearly so attractive in the cold winter, or even in the autumn when the leaves were falling. And yet, when one took time to observe the extensive variety in this spinney, and to focus on the individual leaves and foliage, it was fascinating indeed. Strange how they are neglected in winter and yet the playground attendees expect them to be there in summer for protection. Perhaps, the trees will start to wither soon. The parents made a note to mention the trees to the children; perhaps the trees could be respected more.

As the children took turns on the different facilities, there were some who did not feel at ease with the swings and were only too pleased to jump on the roundabout, and others who were content on all the pieces of equipment. It didn't matter who was 'best' at anything, the parents were happy just so long as each child tried each activity. And how the children's level of confidence soared! Long forgotten was the initial apprehension; they had begun by putting their faith in the parents, then placed it in the equipment, and now they had faith in themselves. It was an 'eye opener.' But there was more to come: a race over the obstacle course was to be the most enlightening activity.

The parents decided to organise a race, with two teams, as a final event before returning home. It was a chance for everyone to have one last go on all the apparatus. The teams were sorted alphabetically. There was a little resentment - "We don't want *him* in our team; he can't climb; he can't swing; he'll slow us down" - but the parents pacified the ring leaders and the teams remained unchanged. Until the obstacle course, some children had clung on to their favourite toys. Teddy couldn't be left behind, nor could he be shared with the others. Although a challenge, it was possible to swing single handed, and
even see-saw safely clinging on with one hand. But it was different on the obstacle course, such toys were recognised as being a hindrance and a handicap to the team and, surprisingly, were readily discarded.

The race began. Everyone set off. It was the team with all its members over the line first which would win. It was neck and neck to the balance beam, and then Team A’s last runner lost his balance. Fortunately not much time was lost - his fellow team members had seen him nearly fall and went back to support him on his second attempt to cross. He was soon at the end of the beam and both teams were heading for the Tarzan rope. Everyone hesitated at the top. It was a long way down - must hold on tight. What a welcome sight the glistening pool below was, especially in this weather. It was positively enticing the children to swing. And so they did, happily landing in cool water, refreshed to face the cargo net. That was a struggle but well worth it for the feeling of satisfaction as the climb was accomplished; and worth it for the free fall at the other side! A bonus! So the race went on, each team having its own little tumbles and accumulating a few grazes and small bruises on the way. All part of the process of learning, the parents knew.

The obstacles were tackled - faster and faster, and with increasing competence - and the home run was in sight. The little boy who hadn’t been wanted by his team was at the back of the field. ‘Oh, no!’ the parents thought, ‘he is going to slow them down. Perhaps they were right after all.’ But then the parents remembered they were the parents; it wasn’t a case of winning or losing, it wasn’t fair to assess such an activity. On such a range of apparatus and with such different age groups of children, that wasn’t the point. A practice run like this could be the start of ‘something big’ for any one of the children. Who knows? There is no winner or loser - everyone wins. And so the parents started cheering all the children down the home straight, each and every one. And what a surprise for everyone. It was as though the little boy had grown
wings on his feet! He accelerated, and accelerated again, and was the first of a pile of exhausted and happy children to fly past the finishing line. The preconceived assumptions had to be denied.

On this occasion the time at the playground had a lot on its side. For instance, the weather was perfect the whole day. Heavy coats could be left at home. Bullies and gang leaders were obviously absent due to the presence of the parents. The playground surface made it safe to take a fall. Playgrounds are not always like this. Perhaps it is our duty in organisations to develop this metaphorical playground.

4.0 Summary

This chapter has acknowledged that a system of evaluation and reflection could prove a beneficial accompaniment to the practice of critical creativity; such a system would be in addition to the integral reflective components embodied by the operationalisation of critical creativity. I have gone some way towards suggesting an appropriate method of evaluation and have demonstrated both the use of holistic reflection and the 'surprise' element of PAR. Some might seek a more definitive approach but absolutes cannot be given for critical practice. The shared underpinnings of the trio comprising PAR, internal evaluation and critical creativity make generalised statements inadequate. Context dependency of all three activities does not promote sweeping generalisations.

Contributors to the further development of TSI are currently seeking performance indicators for use in its Problem Solving Mode (Flood and Green, 1996). Perhaps there will be links between their work and a system of evaluation for critical creativity. It is too early to predict that now. I therefore end this chapter on the premise that, at present, internal evaluation paralleled with holistic reflection holds promise for improved pursuit of critical creativity.
CHAPTER 10

1.0 Introduction

This concluding chapter acknowledges the achievement of the original aims of the thesis. In doing so, Chapter 10 consolidates the information conveyed in earlier chapters and emphasises the contribution that this piece of work makes to the creativity movement. While the creativity movement was the foremost intended beneficiary for the learning gained during this research process, it is clear that other disciplines and movements could also be enhanced by the insights I have generated. The systems movement, the general study of problem solving and reflective practice are three which spring to mind as being influenced by the contents herein. Impacting on more than one field cannot be declared to be a totally unintended consequence for the critical nature of creative studies has been embraced and exploited throughout this thesis.

This chapter also acknowledges that the findings from my research are but additional stepping stones in the investigation and enrichment of creative problem solving. The nature of the strategy I adopted and the nature of the topic do not allow one to claim that the findings are conclusive. The learning goes on. Iteration is welcome. So, once the original aims of the thesis have been reexamined and the contribution defined, I look to the future. Ideas for future research in this area are put forward. There is potential for further enrichment of creative problem solving. It is on that optimistic note that the chapter closes.

So, to consolidate earlier chapters then.

2.0 Consolidation

The main aim of this thesis was to provide methodological guidelines to practitioners and researchers of creativity enhancing techniques who seek to
manage the diversity of related subject matter in a critically reflective manner. This aim was set out in Chapter 1. Nine chapters later, I now work towards telling how this aim has been achieved. Discussion is presented through the structure of the thesis. Individual aims of each Section are portrayed; their synergistic interconnectedness is drawn out as I address the overall aim.

2.1 Section I: Development of Critical Creativity

From a review of the literature surrounding, firstly, creativity and then problem solving, came the perceived need for a new form of creativity. Both reviews revealed historical characteristic eras. Both reviews had identified that a forthcoming era of creative problem solving could benefit from the integration of a form of creativity which was able to take into account the context in which it was being operated. The notion of ‘critical creativity’ emerged as it was recognised that creativity _per se_ could not hope to fulfil the requirements of future organisational life. While not fully defined at this stage, the integration of critical creativity into problem solving processes showed promise of greater success in such processes.

The second chapter in Section I then went on to explore means of stimulating and enhancing creative thinking. It also communicated the enormity of task associated with choosing from the range of creativity enhancing techniques. A taxonomy which organised techniques into six levels was a start towards a more structured approach, but I closed the chapter by admitting that a taxonomy alone was not adequate guidance for reflective practitioners.

So, the first Section had surfaced a need to move into a new era of creative problem solving which utilised critical creativity. This form of creativity would promote awareness of the context of operation. However, it was also recognised that the practice of such a form of creativity required informed choices to be made by practitioners; an issue tackled in the next Section.
I was mindful that some interventionists were already pursuing what I had referred to as 'critical creativity'. Albeit, much of the pursuit was implicit in their problem solving frameworks, I was aware of the contributions already made by people such as Ackoff, Morgan, Lunzer and Gibson. Each of these parties had developed and applied a creative problem solving approach which, I hypothesised, attributed a degree of success to their 'match' with the contexts in which they were applied. It seemed that certain frameworks for promoting creative thinking were more appealing in some scenarios than others. A comparative study of applications of a selection of such approaches enabled their differences to be drawn out and a positive match with particular contexts suggested. Although Chapter 5 acknowledged that there was already a shift towards critical creativity, my intention was to advocate a more explicit pursuit. Practitioners and researchers alike, I thought, would appreciate more guidance.

At a theoretical level, a connection was made between a systems based problem solving framework called Total Systems Intervention and critical creativity. Chapter 6 fully introduced critical creativity, presenting its philosophy and principles, and then offered TSI as a process to guide its pursuit. Some may argue that they already practise many of the principles of TSI, without reference to the said framework, and therefore would quite naturally practise critical creativity to a degree. I would comment that systemic, participative, reflective practice which is striving for human emancipation could, indeed, be achieved with vehicles other than TSI. I offered this particular framework because it wholly reflects the philosophical foundations of critical creativity and because I have personally found it to be effective on application. It is not, however, offered in an imperialistic manner.

So, Section II had fully introduced critical creativity and operationalised the concept.
2.3 Section III: Creativity vs Critical Creativity

While Section II had focussed somewhat at the theoretical level, Section III originated from the practical arena. This was where the benefits of pursuing critical creativity were clearly seen. Away from the ‘ivory towers’ of academia the trials and tribulations of the real world provided a setting for testing my hypothesis. As close to a ‘before and after’ experiment as was feasible, was shared via Chapters 7 and 8. Even though direct comparisons could not be made between the two case studies, there was sufficient information to suggest that critical creativity had brought more creative and more discerning outcomes and outputs than creativity per se.

So, Section III has seen my hypothesis regarding critical creativity put to the test. It fared well. In addition, both the practice of creativity and of critical creativity, though acknowledged as capable of improvement themselves, brought new learning and understanding to the theoretical arguments.

2.4 Section IV: Creative Management of Creative Management

This shorter, final Section put forward a process of evaluation for the operationalisation of critical creativity; an evaluation as undertaken from an overview position rather than the integral process embraced by TSI. Interventionists and their clients, in addition to researchers, often gain security from a system of measurement. Measures of performance can provide yardsticks for gauging ‘how well their intervention has done’. However, the nature of the practice of critical creativity - with its adherence to the four key principles of reflection, participation, systemic thought and human emancipation - does not promote rigid criteria for evaluation. A complementary evaluation process seems to be that of internal evaluation.

To complement internal evaluation, and indeed critical creativity, I suggested a process of reflection for surfacing more new learning from such
operationalisation. Metaphorical reflection seemed appropriate for the CVS and Anglian Water interventions. Since metaphors had been mentioned at some depth earlier in the thesis, I demonstrated their application in the second half of Chapter 9.

The processes of internal evaluation and reflection are intended to be creative themselves. In fact critical creativity could in turn guide these processes. But that is going a little beyond the boundary of this piece of work.

2.5 Summary

I have moved from a position where I recognised the need for a form of creativity which I termed 'critical creativity.' Next, I fully introduced the concept and suggested a framework by which one could operationalise critical creativity. The testing of my hypothesis followed, in order to gain credibility for my approach in a real life situation. Suggesting a framework of evaluation and reflection was the last phase in this iterative cycle. I have provided a vehicle by which our processes of creative problem solving can be creatively guided; a means for the creative management of creative management.

3.0 My Contribution

Having reexamined the original aims of the thesis, I now go on to emphasise the contribution that this thesis makes to theoretical and practical arenas. I start with two broad based contributions and then present a more specific example.

3.1 The Theory - Practice Relationship

Individuals often display a penchant for basing themselves either in the theoretical world or in the practical world. Academic researchers and practitioners are often viewed as being poles apart. Each party may value their work as more important than the others. During the compilation of this thesis I
took care to demonstrate the ease with which one could move between these two worlds. Such movement can result in a mutually beneficial exchange as I hope to have shown here. The reciprocal dependence of theory with practice was highlighted throughout this thesis and is a relationship which I would hope to come to the fore in other fields of interest. The benefits of harnessing both worlds, I suggest, are preferable to being isolated in one.

### 3.2 Promotion of Reflective Practice

Reflective practice is a major issue in its own right and one which becomes more topical with time. An underlying contribution of this thesis is to continue the promotion of reflective practice, or at least the promotion of a more thoughtful type of practice. Questioning our practice is a challenging quest but one which will ultimately lead to more ethical and moral conduct by clients and interventionists alike. This thesis as a whole, and particularly the reported case studies, add to the momentum of a reflective practice movement.

### 3.3 Critical Systems Thinking and Creative Thinking

Speaking more specifically of the contribution of this thesis, I now consider the subject matter. I have linked Critical Systems Thinking with creative thinking. The systems and the creativity disciplines are two powerful forces of research and practice. This thesis joins them; probably the first time this connection has been made.

As disclosed in the opening chapter, systems approaches to creativity have already been developed. With the significant progress in the systems field, the aforementioned approaches are now becoming out of date. They have not been able to incorporate the latest advances in the systems world. This thesis takes the creativity movement forward into a new era and injects a new dimension into systems studies. That is the major contribution of my work.
Having identified three significant contributions of this thesis I now look ahead to areas of future work from which other contributions may arise.

4.0 Future Work

As with virtually all research projects, there is inevitably some frustration experienced when drawing them to a close. Bounded by external influences such as time restrictions or client requirements, there is not often the opportunity to explore each new avenue one has discovered along the way. There were several new insights which I had to resist incorporating into this research process. While some may have categorised these neglected insights under a heading of ‘things I would do differently next time’, I am reconciled that these insights are openings for future work. I now share three substantial areas for further investigation which were not evident at the start of this PhD process.

4.1 Variety of Frameworks

TSI was the sole applied framework in my pursuit of critical creativity. Although its choice can be explained through the sharing of similar philosophical underpinnings between critical creativity and TSI, some may perceive this as a narrow approach. There may be criticism from those who favour frameworks other than TSI. In my defence I would acknowledge the limitation of using only TSI but go further and include the limitation of using only two case studies.

Ideally, triangulation of various frameworks and various case study settings could have been tried. This would have brought more empirical evidence and allowed a comparison of approaches. However, the time limit and the depth which PhD research demands did not allow for such permutations. Active research in this area over the next few years might bring an accumulation of experience using a variety of frameworks in a variety of settings; that wealth
4.2 Cultural Issues

Another large area I have subsequently identified for further investigation is that of cultural issues. It could be important to know whether, and how, national and organisational cultures influence the stimulation of creative thinking. I mentioned one example in Chapter 8 where a Nigerian team member constantly referred to ‘the family’ in his metaphorical explorations of Anglian Water. This was not common amongst the British members.

I did not pay much attention to this aspect until I attended the 1996 European Association of Creativity and Innovation conference. There I was to learn that cultural differences were raising their head with a prominent group of delegates. With increasingly cosmopolitan organisations, cultural responses to creativity are becoming more significant. A sensitivity towards them could make the difference between stimulating and suppressing creative problem solving. The relationship between culture and creativity is definitely an avenue for further exploration.

4.3 Teaching and Learning Creativity

The teaching and learning of creativity, particularly amongst students under the age of eighteen, absorbs much attention. Fryer’s (1996) recent text of that same title has built on Shallcross (1981) and Torrance’s (1965) work; I look to it as a current field leader. Fryer takes a holistic view of the subject. She considers multiple perspectives - male and female definitions of creativity, concerns with various age groups of students, arts and science teachers’ challenges in creating a creative environment, and so on. The teaching and learning of creativity would seem to be nearing the development of a systems approach.
Section IV

Chapter Ten

From my perspective, the next logical step would be to use a framework such as TSI to move this aspect of creative studies into a new era. The bringing together of a critical systems thinking with creative education would be another significant area of activity for the future. The systems approach could be skipped; a critical systems approach could be developed.

4.4 Final Comment

The proposal my colleague and I submitted to Anglian Water articulated many of the feelings I have for this research. I have experienced the same spontaneity, synergy and fun during this study which we proposed as outcomes of the two day event. Equally, I have experienced the frustrations and lulls in activity which Anglian Water did. At the end of the day, it has been an equally exhilarating, learning process.
Figure 1. Model of the Research Process
Figure 2. The Recursive Structure of TSI
Figure 3. The SSM Cycle

(Checkland, 1989)
Figure 4. The Internal Evaluation Loop

(Love, 1991)
BRAIN ACTIVATION & CREATIVE STATES

(The upper part of the chart has been freely adapted from the work of Dr. Monroe, Monroe Institute, Virginia, USA as reported in Patrick Drouot public conferences, cf Institut Physique & Conscience Paris, 1992)

*Hemi-sync is a registered trade mark of the Monroe Institute
ANGLIAN WATER CREATIVITY EVENT

Schedule

DAY ONE

Introduction

9.15   Introduction to creativity
9.30   Structure of the two days
9.45   The C Parable

Working as Individuals

10.00  Nine Dot Puzzle
10.15  Adding Numbers

Working as Pairs

10.30  Tangrams
11.15  BREAK

Working Silently

11.30  Nominal Group Technique
12.15  Feedback Session
12.30  LUNCH

Experiencing the Benefits of Discussion

1.30   Brainstorming
3.00   COFFEE
3.30   Metaphors
5.00   Feedback Session
5.30   Close
DAY TWO

9.00 Six Thinking Hats

9.45 Idealised Design - introduce

10.45 COFFEE

11.00 Idealised Design - practice

12.30 LUNCH

1.30 Outdoor Exercise

3.30 Measuring Creativity

4.00 Feedback Session

4.30 Finish
Completed sheets will be treated in confidence. Most of the questions can be answered by circling an appropriate response. However, please feel free to add additional comments or examples, alongside any of the questions.

1.0 DETAILS OF EVENT

1.1 Name of organisation:

1.2 Department:

1.3 Date of creativity event:

1.4 Venue:

2.0 SCHEDULE

2.1 Was the pace of the event too fast too slow just right?

2.2 Was the length of the event too long too short just right?

2.3 Was there an acceptable mix of discussion, presentation, reflection and practice? Yes No Not sure

3.0 PHYSICAL ENVIRONMENT

3.1 Were you satisfied with the location? Yes No Not sure

3.2 Was the location conducive to creativity? Yes No Not sure

4.0 CREATIVE APPROACHES

We covered a range of creativity approaches during the two days. Just to remind you, they included:

(a) brainstorming
(b) nominal group technique
(c) metaphors
(d) six thinking hats
(e) idealised design
Creativity Workshop Feedback Sheets

4.1 Which of these were you already aware of before the event? (a) (b) (c) (d) (e)
4.2 Which of these have you used at work since the event? (a) (b) (c) (d) (e)
4.3 Which do you foresee yourself using in the future? (a) (b) (c) (d) (e)

5.0 GROUP COMPOSITION

5.1 At any time, did the group composition inhibit your creative thinking?
   Yes  No  Not sure

5.2 At any time, did the group composition enhance your creative thinking?
   Yes  No  Not sure

6.0 FACILITATION STYLE

6.1 How would you describe the facilitation style?
   Expert  Enabler  Participant  Observer  Mix of all

6.2 At any time, did the facilitation style inhibit your creative thinking?
   Yes  No  Not sure

6.3 At any time, did the facilitation style enhance your creative thinking?
   Yes  No  Not sure

6.4 How often have you used the associated handbook since you returned to your organisation?
   Never  Once or twice  Regularly  Frequently

7.0 CHANGES IN ORGANISATIONAL PRACTICES

7.1 Do you consider you are more creative at work since the event?
   Yes  No  Not sure

7.2 Do you consider your department, as a whole, is more creative since the event?
   Yes  No  Not sure

7.3 Do you consider your department operates more effectively as a team since the event?
   Yes  No  Not sure
8.0 **GENERAL**

8.1 In what ways do you think the event could be changed so as to ensure a greater impact on your organisational practices?

8.2 Additional comments in relation to the above areas and any others you consider would be useful to me.

Thank you for your help.
Outline of Framework for Approaching Development Projects
(as developed by the Development Team)

There are at least three defined points at which a structured assessment of a development project can be carried out:

1. An initial assessment to determine whether it is appropriate to undertake the project and what level of priority it has;

2. An interim assessment to monitor whether the project is developing as predicted; and

3. A final assessment to evaluate the outcome.

Each point is intended to be a learning stage to enable the team to review the approach to the project and adapt accordingly, in order to continue to be effective. A holistic approach is attempted, in which both qualitative and quantitative aspects are taken into account along with consideration of their interconnectedness.

The following areas of consideration could provide a framework for such assessments. They are not intended for use in isolation nor in a “once only” fashion - indeed, iteration will enrich the whole process.

ESSENTIAL

* Is the nature of the project such that it is non-discriminatory? The ideals of Equal Opportunities should prevail except where it intrudes on oppressed groups.

* Is the project of a voluntary nature? There should be no individual pecuniary gain and the benefits should be able to be appreciated by the community.

The answer to both these questions should be “YES”, before further examination of the project should continue.
INITIAL ASSESSMENT

Identification of the need - what is the need?
what is the extent of the need?
who decided it was a need?
how strong is the need?
whose need is it?
why is it a need?

How disadvantaged is the group?

Are there any existing provisions to serve this group?

What is the estimate of resource commitment from CVS to be effective in this project? - time, skills, finances.... Would any additional training be required before accepting this project?

What is the immediate dependency on CVS? Will the project proceed without CVS? How long will the dependency on CVS last?

What could be the impact of the project? Who will benefit? How many people will it benefit? How will they benefit? To what extent will it affect their quality of life? Will there be any negative impact?

How will involvement in this project affect the profile of CVS?

Could funders' needs influence the involvement in this project?

Does the Project Worker have any specific requirements which this project would or would not meet?
MONITORING AND EVALUATING
(INTERIM AND FINAL STAGES)

DEPENDENCY
How independent is the group from CVS?
dependent on CVS -> independent of CVS

LIFETIME
Will the group survive to carry out its purpose?
no -> maybe -> yes

SKILLS BASE
To what extent has the skills base been increased?
not at all -> a little -> significantly
DEVELOPMENT
Has there been evidence of personal development in the group?
none -> a little -> significant

NETWORK
Has the community network been strengthened?
no -> a little -> significantly

ACCESSIBLE
Is the organisation accessible to the group it set out to serve?
no -> partially -> yes

RESPONSIVE
Is the organisation responsive to need?
no -> partially -> yes
ACCOUNTABLE
Is the organisation accountable to its area of benefit?
no -> partially ->yes

REPRESENTATIVE
Is the organisation truly representative?
no -> partially ->yes

CONSTITUTION
Has the organisation formed a constitution?
no -> in progress ->yes
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