Creative Problem Solving for Managers

Developing skills for decision making and innovation

Third Edition

Tony Proctor

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The regularity with which the term 'solutions' is used in management speak suggests that management is largely about problem solving. To suggest that thinking creatively is a useful skill in solving a problem may be stating the obvious, but experience tells us that under pressure, managers tend to fall back on the 'tried and tested' rather than the new and creative.

This text provides an essential introduction to the ideas and skills of solving problems creatively. It demonstrates:

- how and why people are blocked in their thinking
- how this impairs the creative problem solving process
- how creative problem solving techniques can help overcome these difficulties

Theories of creative thinking are critically examined and utilised to explore the variety of techniques that can be employed to discover insights into difficult management problems. Using case studies and case histories together with extensive diagrams, examples and thought-provoking questions, *Creative Problem Solving for Managers* provides the most up-to-date and extensive approach to this important topic.

This refreshing new edition will prove essential reading on the growing number of 'creativity management' classes springing up in business schools and will also be a helpful read on a range of other modules that require a creative mindset.

Tony Proctor is Professor in Marketing at the University of Chester, UK. His research interests lie in creativity, organizational studies and marketing. He has published a number of books, as well as papers in academic journals and conferences.

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Preface to the third edition

Interest in creative problem solving never seems to wane. Perhaps this is not too surprising since in a world that is constantly changing and presenting new challenges, pathways to the solutions of new kinds of problems are always in demand. In a world where nothing is certain and even long-established businesses can begin to crumble in a matter of months, radical new ways of looking at problems seem to be the order of the day. Creative thinking is not the 'universal antidote' capable of curing all, but it offers ways to examine problems that force us to question fundamental issues. It makes us challenge basic assumptions. There are no such things as firm foundations – the bedrocks of civilization can crumble into dust while we look on in awe and trepidation!

I am often asked whether the various approaches I outline in this book really work. The answer to this, I feel, is really only known by those who use the methods. Moreover, it is always difficult to know if you would have been able to find an answer to a problem which you did not know existed without the aid of the techniques I outline here. Or, indeed, for that matter, whether you might solve the problem more to your satisfaction by using other methods.

The material contained in this book should appeal to a wide audience. I originally thought the subject matter was something which would perhaps most interest experienced and mature adults. I discovered that not only was it something which appealed to experienced managers but it also held the attention of management students of all ages and backgrounds. One of my most enlightening experiences has been getting final-year undergraduates interested in the subject.

The subject matter of this book will appeal to people who have a variety of different interests in management. Whether your primary interest is in accounting, personnel management, marketing, production, research and development, and so on, does not really matter since the subject matter contained in this book is relevant to all these interests. However, you must approach the subject with an open mind; and all the methods, no matter how ridiculous they may seem, should be treated seriously – but not so seriously that they cannot be enjoyed. The greatest barrier to appreciating the subject matter of this book is scepticism.

The book first sets the scene for management creativity. It explains what creativity and creative problem solving are thought to be. It then considers why creativity management is considered to be important. The various blocks to creative problem solving are explained, as are the actions that are required to get around these difficulties. A chapter outlines some of the most recent ideas relating to creativity and creative problem solving. This chapter is important since it provides a background and explanation for many of the steps in the creative problem solving process which

are considered in subsequent chapters. Each step in the creative problem solving process is explored in some depth, and illustrations are given of some of the principal mechanisms used to help structure and stimulate thinking. The final chapter is given over to considering how interaction with computers can help to stimulate creative problem solving.

Throughout the book there are ample illustrations of the key points. There are specific case studies attached to each chapter. The latter invite the reader to make use of all the knowledge he or she has gained about the creative problem solving process through reading the book.

In the third edition I have introduced quite a lot of new material and deleted redundant material that appeared in the second edition. The specific changes to each chapter are outlined below.

In Chapter 1, 'Creativity and its importance in business', I have, among other things, commented on the importance of continuous improvement as opposed to radical breakthroughs in innovation. I have also included a section relevant to formulating strategy and commented specifically on managing creatively in turbulent times. I have added additional discussion questions and one new case study.

In Chapter 2, 'Blocks to creativity', I have added a section addressing organizational culture and a climate for creativity. There is also additional material of a theoretical nature and a new case study contributed by Rosmimah Mohd Roslin and Puteri Norashikin Mohamad has been added.

In Chapter 3, 'Theories of creativity and the creative problem solving process', I have added sections highlighting the investment theory of creativity of Sternberg; recent research findings relating to incubation of ideas; and theoretical considerations relating to the use of analogies. I have also focused attention on Fisher and Amabile's thoughts regarding compositional and improvisational creativity. The chapter contains additional questions for discussion.

Chapter 4, 'Objective finding, fact finding, and problem finding/definition', contains a new case study provided by Ioanna Papasolomou. I have also tried to clarify the text of the chapter in the early sections.

Chapter 5, 'Morphological analysis and related techniques', has some minor additions and modifications to the text.

Chapter 6 is essentially the same as in the second edition except that I have deleted the case study on the Millennium Dome.

In Chapter 7, 'Lateral thinking and associated methods', I have added a note about the Six Thinking Hats approach and included two additional case studies.

Chapter 8, 'Synectics', is essentially the same as in the second edition except for some extra comments at the beginning of the chapter.

In Chapter 9, 'Paradigm-breaking techniques and some miscellaneous ideation methods', the section on mind mapping has been expanded and the material on TRIZ has been expanded and moved to this chapter. I have also deleted the Swiss railways case study which appeared in this chapter in the second edition.

Material relating to theories of *natural decision making* has been included in Chapter 10, 'Evaluation'. I also now mention the use of cognitive maps in relation to identifying the critical criteria nature of multiple objectives and goals in evaluation and decision making. There are also additional questions and an additional case study.

Some additional material has been included to clarify some of the issues involved in Chapter 11, 'Implementing ideas'.

In Chapter 12, 'Computer-assisted creative problem solving', I have commented on some recent programs that are available at the time of writing but much of the material highlighting past programs and how they may be obtained has been removed. I have done this because the Internet is constantly being updated and the references become out of date and/or the programs not available.

In view of the additional material included in the chapters the bibliography has been substantially added to and many recent references included.

I would like to express my thanks to Dr Ioanna Papasolomou of Intercollege, Cyprus, and Dr Rosmimah Mohd-Roslin and Dr Puteri Norashikin Mohamad of the MARA University in Malaysia for their contributions of case-study material. My thanks also to Dr Elspeth McFadzean for her thoughts that techniques might be considered in the light of whether they are useful in *paradigm preserving*, *paradigm stretching* or *paradigm shifting*.

Tony Proctor, 2009

Chapter 1

Creativity and its importance in business

Aircraft pollution

With the advent of the jet engine and advanced navigational instrumentation the airline industry was born. The death knell was sounded for the transatlantic passenger liners, and as one product life-cycle drew to a close a new one began. The jet engine heralded a paradigm shift in civil aviation, and creativity was needed to harness, to exploit and to market the applications of the newfound technology. Some fifty years on, important questions are now being raised about the viability of air travel in the long term. High levels of environmental pollution from aircraft emissions during flight and the environmental impact of the growth of airports in densely populated areas are only two of the issues that are becoming a cause for concern. Creative thinking is required to find ways of dealing with both of these issues.

INTRODUCTION

In this chapter we shall review some definitions of creativity and highlight the importance of creative problem solving in enabling business executives to cope with novel or new problems. We give some consideration first to defining creativity and then to distinguishing between creativity and innovation. Various notions exist on how ideas arise in our mind. These are introduced in this chapter and developed further in Chapter 3. Creativity in business is important, and managers need to possess the ability to gain creative insights. We look at the importance of creativity to business and managers, picking out those instances where it is most needed and relating it in particular to the notion of paradigm shift. In the later sections of the chapter we look at characteristics of creative thinking and creative thinkers, highlighting the qualities of a creative person and pointing to how creative skills can be achieved through training.

SOME DEFINITIONS OF CREATIVITY

Creativity involves an ability to come up with new and different viewpoints on a subject. It involves breaking down and restructuring our knowledge about the subject in order to gain new insights into its nature. However, any definition of creativity is complicated because the concept has many dimensions.

What is creative thinking?

Creativity is a concept which we often come across in our everyday conversation. We hear of creative people, admire creative objects of art or read creative books. Yet despite our almost innate understanding of what it means to be creative there is much confusion about the nature of creativity.

Wertheimer ([1945] 1959) suggested that creative thinking involved breaking down and restructuring our knowledge about something in order to gain new insights into its nature. Understanding our own cognitive model of reality may therefore be an important determinant of our ability to think creatively. Kelly (1955) and Rogers (1954) both supported this argument by maintaining that we can be creative by gaining an understanding of how we think about a subject. Creativity is something which occurs when we are able to organize our thoughts in such a way that readily leads to a different and even better understanding of the subject or situation we are considering.

Maslow (1954) thought of creativity as having two levels. He envisaged primary creativity as the source of new discovery, real novelty, or ideas which depart from what exists at a given point in time. He saw secondary creativity as a characteristic possessed by many scientists in their collective search for discovery achieved by working alongside other people, extending the work of previous researchers, and exercising prudence and caution in their claims about new insights or ideas. He envisaged creativity as an aspect of human nature that was to be found universally in all human beings. In children he felt it to be an easily observable phenomenon but suggested that it seemed to become lost in adults, surfacing mainly in dreams with the relaxation of repressions and defences. It was a view that was echoed subsequently by Stein (1974), who argued that without such an assumption the techniques for stimulating creativity would have no application.

Torrance (1965) defined creativity as:

> The process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses or formulating hypotheses about the deficiencies; testing and retesting them; and finally communicating the results.

This contrasts with that of Newell *et al*. (1962). They adopted a criterion-based approach, which suggests that any problem solving may be creative. Indeed, Haefele (1962) argues that every one

of us must be creative to some degree because we have to find new solutions to newly presented problems.

Rickards (1985: 5) defines creativity as 'the personal discovery process, partially unconscious, which leads to new and relevant insights'. Rickards (1988: 225) also advocates a view of creativity as a universal human process resulting in the escape from assumptions and the discovery of new and meaningful perspectives, or as an 'escape from mental stuckness'. In broad terms he believes creativity is to do with personal, internal restructuring.

Creativity is very much concerned with how we imagine things. Although language is a medium of expressing our creative feelings, our creativity is often gained through images and sensations which are difficult to express in words. As Koestler (1964) said: 'True creativity often starts where language ends.'

Weinman (1991) considered that creativity is the ability to go beyond the mundane and obvious and reject the traps of repetition and pre-set categories. Similarly, Gilliam (1993) defined creativity as a process of discovering what has not been considered – the act of making new connections.

More simply, creativity can be thought of as 'the production of novel and useful ideas in any domain' (Amabile *et al.*, 1996: 1155).

Yet one more approach, along with many others, is offered on the Internet: 'Being creative is seeing the same thing as everyone else but thinking of something different' (http://www.ozemail.com.au/~caveman/basics/definitions.htm).

These various definitions seem to agree that creativity involves an in-depth thought of a subject and an ability to come up with new and different viewpoints. However, any definition of creativity is complicated because the concept is multi-faceted.

INVENTION AND CREATIVITY

Invention is an act of creativity that results in a device, process, or technique novel enough to produce a significant change in the application of technology.

Invention is an act of creativity that results in a device, process, or technique novel enough to produce a significant change in the application of technology. The application is fundamental to invention. The element of novelty has various forms; it may be a new device or process, or even material, but it may also consist of a combination of existing knowledge in a manner not previously considered. For example, James Watt added a separate condensing chamber – a new device – to Thomas Newcomen's atmospheric engine and created the steam engine.

INVENTIONS, INNOVATIONS OR JUST CREATIVE RESEARCH?

Gene research

In 1988, Rudolf Jaenisch and co-workers succeeded in implanting in mice the gene for a hereditary disease of humans. It was thought that it would open the way to the study of such diseases and to improved treatment.

Superconductors

In 1911, Heike Onnes discovered that electrical resistance in mercury disappears when the mercury is cooled to absolute zero. This phenomenon is known as superconductivity. It was found subsequently that other metals and alloys also become superconducting at very low temperatures. Today superconductors are used in large and powerful magnets, mainly in particle accelerators and the magnetic-resonance imaging machines used in medicine. There are other potential applications.

Infinity of non-smooth four-dimensional spaces

In 1987, Clifford Taubes discovered that the infinity of non-smooth four-dimensional spaces is uncountable (an infinity is countable if each element in it can be matched to one of the counting numbers).

Quarks

When physicists first began to think deeply about quarks they were puzzled because isolated quarks had not been observed. One idea was that quarks might be the ends of strings. Assuming that a particle was a string and that quarks were just the ends of the string, then it was plausible why one never found a quark without the other. A string is essentially a one-dimensional object in a space of four dimensions (counting time as a dimension). Physicists turned to topology, the mathematics of knots and surfaces, to find out what the implications might be of using strings instead of particles in their calculations. To their surprise, they discovered that strings simplified the calculations.

Question

How would you classify each of the above four illustrations in terms of inventions, innovations or just creative research?

From a business development point of view and in terms of developing growth strategies it is suggested that breakthrough innovation should not be the focus of attention. Indeed, the latter strategy may be too radical for some markets (Treacy, 2004). Evidence points to over a 90 per cent failure rate among new products launched into the marketplace and that the majority of these were based on radical technologies (Christensen *et al.*, 2005). Such evidence indicates that, in order to remain competitive, organizations should seek to develop new products via incremental technologies (Moon, 2005). Adopting a process of continuous improvement to existing products appears to be a requirement of continued success (Randall *et al.*, 2005). Adopting such a strategy involves the re-design of existing models/products with incremental technologies and it produces cost savings in terms of time and money and may lead to retention of existing customers (Treacy, 2004).

The two general theories of invention are the *deterministic* and the *individualistic*. The deterministic theory holds that when economic, technical and cultural conditions are ripe an invention will be made by one inventor or another; who does it is just historical accident. This theory has some support in the numerous instances of simultaneous and independent invention. It also helps to explain the competing claims that emerged over the invention of the steamboat, the electric telegraph, the incandescent lamp and the aeroplane. The theory is also plausible because timing is unquestionably important in invention. Also, inventors are likely to focus on projects that are reasonably attainable and for which there is a recognizable need or demand.

IDEAS AND HOW THEY ARISE

Generating ideas is not just a chance process. Ideas appear to arise by chance only when people are actually looking for them. It does not happen to people who are not curious or enquiring or who are not engaged in a hard search for opportunities, possibilities, answers or inventions.

One might, indeed, think of ideas as 'the sentences of thought'. Ideas are mental phenomena which somehow drift into the mind, wander through and often vanish into obscurity, never to be recalled again. Making notes on ideas as they arise is extremely important. Graham Wallas (1926) tells the story of a man 'who had so brilliant an idea that he went into his garden to thank God for it, and found on rising from his knees that he had forgotten it, and never recalled it'.

In terms of problem solving we might prefer to think of 'insights' rather than ideas. The gaining of insights into a problem can lead to a restructuring of that problem and the development of further insights into the solution of the problem. There may not be a perfect solution to a problem which requires creative thought but only different solutions, more acceptable solutions and, often, only further insights into a problem.

Many ideas seem to occur by chance. Fleming discovered the effects of penicillin quite by accident – it was blown in from an open window and killed bacteria in a saucer which contained a strain he was investigating. While searching for a way to hear the sounds of the heart, Laennec found his answer when he noticed two boys playing in an unusual way with a see-saw. The one

was hitting one end of the wooden see-saw with a stone while the other listened with his ear pressed close to the other end. The idea of the stethoscope leaped to Laennec's mind. Westinghouse discovered the idea of the air-brake when he casually read in a journal that compressed air power was being used by Swiss engineers in tunnel building. Kekule gained his clue to the nature of the benzene ring from his dream of a snake swallowing its own tail. Rutherford used the solar system to understand the structure of the atom. He viewed the electrons as revolving around the nucleus in the same way that the planets revolve around the sun. Einstein's theories came from analogies about riding on light beams and travelling in lifts.

However, generating ideas is not just a chance process. Ideas appear to arise by chance only when people are actually looking for ideas. It does not happen to people who are not curious or enquiring or who are not engaged in a hard search for opportunities, possibilities, answers or inventions.

It is also widely recognized that immersion in one's subject matter can be an important factor in gaining creative insights. Newton, for example, arrived at the law of gravitation by being preoccupied with the problem all the time. It is also known that Einstein tried for years to clarify the problem of the relation of mechanical movement to electromagnetic phenomena. Creative insights appear to be easiest to gain in fields where we have considerable prior knowledge and experience. Nevertheless, there is a paradox here, for we tend not to think about what we think we know already. Existing ideas tend to make us myopic about new possibilities. The paradox reveals itself in that it appears that creative ideas do not come to us unless we spend much effort engaged in just the activity which makes their emergence most difficult.

Motivation also plays an important role in our ability to be creative. Again there is a paradox, for creative work demands both a passionate interest on the part of the thinker and a certain degree of detachment from the work and ideas. Creative thinking, however, does not appear to occur where the individual's interest in the subject matter is relatively low. There seems to be a delicate balance whereby the creative thinker has to remain sufficiently detached from the work.

CREATIVITY AND INVENTIONS

Christian Doppler gave his name to a well-known principle which he discovered in the nineteenth century (the Doppler effect). We can observe it any time a motorist sounds his or her horn while passing us by. As long as the source of the sound approaches us the pitch seems higher than when it moves away from us. Sound-waves are just one form of *wave* subject to this effect.

Can you think of how twentieth-century inventors might have made use of this principle to come up with commercially applicable inventions?

See Appendix 2 for solution.

THE IMPORTANCE GIVEN TO CREATIVITY IN BUSINESS

Logical thinking progresses in a series of steps, each one dependent on the last. This new knowledge is merely an extension of what we know already, rather than being truly new. The need for creative problem solving has arisen as a result of the inadequacies of logical thinking. It is a method of using imagination along with techniques which use analogies, associations and other mechanisms to help produce insights into problems which might not otherwise be obtained through conventional, traditional methods of problem solving.

In management, problems arise as different or new situations present themselves and they often require novel solutions. Frequently, it is difficult to see solutions to problems by thinking in a conventional fashion. Logical thinking takes our existing knowledge and uses rules of inference to produce new knowledge. However, because logical thinking progresses in a series of steps, each one dependent on the last, this new knowledge is merely an extension of what we know already, rather than being truly new. It would seem, therefore, that logical thinking has only a limited role to play in helping managers to be creative. The need for creative problem solving has arisen as a result of the inadequacies of logical thinking. It is a method of using imagination along with techniques which use analogies, associations and other mechanisms to help produce insights into problems.

Over the past few decades creativity has become a highly fashionable topic in both the academic and business worlds. That is not to say that creativity did not exist before, but its importance to the continued success of an organization had yet to be recognized. Many management problems require creative insights in order to find satisfactory solutions. Nowadays, the majority of organizations are fully aware of just how vital creativity is to their prosperity. Over time, considerable research has been undertaken which enables us to obtain a better understanding of creativity and become more innovative ourselves.

AN ECONOMIC CLEANING JOB: FINDING A LESS COSTLY WAY OF PERFORMING A TASK

Tank Refurbishers clean out and reline industrial storage tanks. In an increasingly competitive market, margins are becoming tighter and profitable business ventures more difficult to find. Nearly all the tanks the firm refurbishes are cylindrical and vary considerably in terms of the volume of liquid they contain. The procedure is to remove the ends, clean and repaint the inside of the cylinder, clean and repaint the end sections and re-weld the pieces after completion of the repainting.

How might the firm seek to be more competitive in the pricing of its jobs?

See Appendix 2 for solution.

Even forty years ago it was reported that the 'accelerating pace of change is now widely accepted . . . Alvin Toffler found evidence that the pace of change was causing "Future shock" and social disorientation' (Rickards, 1985: 186), and this change is an ever-present phenomenon to which businesses of all kinds are forced to respond if they want to stand the best chance of survival and prosperity. But how should they respond? An increasing number of problems have no precedents, and there are fewer tested ways of approaching them. This poses problems for organizations. Many suggest that creativity is indeed the answer; and, as Majaro (1991: 1) suggests, 'It is universally assumed that enhanced creativity can provide a company with a competitive edge'. A survey sponsored by Porter/Novelli among 100 executive readers of *Fortune 500* in 1993 found that people thought creativity was essential to ensure success in business. The finding has been reiterated several times since in different sources (De Brabandere, 2005; Gogatz and Mondejar, 2005).

A plethora of literature has emphasized the need for creativity in business. Indeed, Oldman and Cummings (1996: 609) note that 'numerous commentators have argued that enhancing the creative performance of employees is a necessary step if organizations are able to achieve competitive advantage'.

Organizations face a large number of problems of about equal importance, but only a few solutions. Thus the chance of finding a solution to a particular problem is small.

Why is creativity in management important? The main problem in management, according to James March (1988), is that: 'Organizations face a large number of problems of about equal importance, but only a few solutions. Thus the chance of finding a solution to a particular problem is small.'

In order to identify and so solve many of the problems that arise in business it is necessary to challenge the problem solving capabilities of those in charge. In many cases the creative process which is used to approach problems has to be restructured and redeveloped in order to produce new ideas and perspectives.

Change is an intrinsic necessity for a company that wishes to perform well in the long term. As Sir John Harvey Jones stated: 'Unless a company is progressing all the time, it is in fact moving backwards. It is quite impossible to maintain the *status quo*' (Rogers, 1996). Attempting to do things in the same way as they have always been done in the past can lead to difficulties in a business environment which is experiencing rapid cultural, economic or technological change. Change is an ever-present phenomenon to which businesses of all kinds are forced to respond if they wish to stand the best chance of survival and prosperity.

The rapid growth of competition in business and industry is often quoted as a reason for wanting to understand more about the creative process (see for example Van Gundy, 1987; Rickards, 1990). Many firms are continually experiencing pressure to enhance old systems and products. Growth and survival can be related directly to an organization's ability to produce (or adopt) and implement new products or services, and processes (Van Gundy, 1987). One of the key aspects of any organization's success or failure is its ability to stay ahead of the competition in a rapidly changing

environment. The modern business, with its emphasis on competition, building larger markets, strategic planning, team working, etc., has created the need for new problem solving and decision making strategies.

An increasing number of problems have few or no precedents, hence there are fewer tried and tested ways of approaching them with the anticipation of reaching a successful outcome.

Looking at the British economy, for example, there has been repeated criticism of the comparative lack of innovation in British manufacturing. Porter and Ketels (2003) argue that managers in British firms are slow to adopt new management techniques, attributing this to a combination of low investment in new technology, and to weak employee training and development policies. They argue that a renewed emphasis on skills development, enterprise and innovation is necessary if the British economy is to remain competitive.

Another reason is that managers need to discover new and better ways to solve problems (Ackoff and Vegara, 1988). In particular, an increasing number of problems have few or no precedents, hence there are fewer tried and tested ways of approaching them with the anticipation of reaching a successful outcome. To stay in business a company has to respond creatively to the problems it faces. Problems may exist in both the external and internal environments. The former poses problems such as how to cope with slow economic growth, how to deal with new entrants to an industry, how to grow sales at the pace of competition in high-growth markets, how to deal with new technological developments and how to cope with shorter product life-cycles. The latter poses problems to do with poor internal communications, financial problems, alienated or poorly motivated staff and inadequate planning.

Creativity is considered to be a vital asset for any person who is in a leadership role.

Changes within a company, forced by either internal or external factors, create an unhappy climate for the company and its workers. Management needs to respond positively to such situations. Creativity is considered to be a vital asset for any person who is in a leadership role (see for example Bennis and Nanus, 1985, and empirical evidence provided by Ekvall, 1988). Creative leaders actively hunt for new problems and are especially successful in handling new challenges which demand solutions outside the routine of orthodox strategies. They often possess significant vision and are able to inspire others by their creative talents.

It has been argued that creativity is an important human resource (Barron, 1988) which exists in all organizations. Organizations have to try to make use of this resource by devising settings which

permit creative talents to thrive. Employees' expertise and skills are important assets in a knowledge-based economy, and have positive impacts on growth and jobs in the economy. Of particular importance are those that produce, adapt and diffuse new technical knowledge. Successful innovation depends on the ability to mobilize technical resources, knowledge and other inputs needed in the innovation process. This includes sources of knowledge, such as networks of firms, concentrations of R&D and business services. When this is available, it enhances the ability to innovate. The interface between science and society provides a platform for increased competitiveness. It permits knowledge transfer mechanisms that bring knowledge to the market as commercialized products (Key Technology Expert Group, 2006).

How creative thinking may be used in management

ILLUSTRATIONS OF HOW CREATIVITY MAY BE USED IN MANAGEMENT

To make more effective use of a manager's time

To improve a product's appeal to customers

To improve motivation amongst staff

To appeal to customers' wants and needs

To cut costs through more efficient/effective production methods

To identify new and profitable product-market opportunities

Creative thinking benefits all areas and activities of management. It is required to dream up better ways of marketing goods, to devise new production methods, to find new ways to motivate people, and so on. Creativity turns up in every business situation where there is a chance that things can be done in a more businesslike, more profitable or more satisfying way.

The following are typical of the kinds of problem which require creative thinking:

- How to make more effective use of a manager's time
- How to improve a product's appeal to customers
- How to improve motivation amongst staff
- How to appeal to customers' wants and needs
- How to cut costs through more efficient/effective production methods
- How to identify new and profitable product-market opportunities
- How to get skilled and experience staff to stay with the company without paying them excessively high salaries

Problems which require creative thinking are 'open-ended' problems: that is, problems for which there is more than one solution. Executives have to make decisions which require creative problem solving in planning, organizing, leading and controlling their organizations:

Planning
Determining the mission of the organization
Determining the organizational objectives
Identifying strengths, weaknesses, opportunities and threats
Adjusting the organization behaviour and strategies to competitors' strategies
Deciding how to implement competitive strategies

Organizing
Deciding what jobs need to be done within an organizational unit
Deciding how various jobs within an organizational unit can be grouped together, etc.
Deciding how much authority should be delegated to various organizational positions
Determining how best to train people for their jobs

Leading
Finding ways of increasing productivity in the workplace

Controlling
Deciding what systems of control are needed
Setting standards
Identifying why standards/objectives have not been achieved

Formulating strategy is another area which can benefit from creative thinking. Mintzberg (1987) identified five activities that describe the strategy process:

1 goal/objective setting
2 analysis (internal and/or external)
3 development of strategic alternatives and selection
4 implementation
5 evaluation

One has to advocate the value of *mental models* in decision making. These models represent commonly held understandings that define the logic of a system and incorporate rule-like generalizations about what will and what will not work in a particular system. While rule-based mental models no doubt can aid problem solving, one should challenge the assumptions upon which they are predicated in the event they cease to provide pathways to solutions. Indeed, challenging assumptions is fundamental to creative thinking.

Morecroft (1992) argues that strategy support tools are useful in terms of helping managers visualize strategy and its implications. In this latter context Tan and Platts (2003) found support for the visualization of complicated analysis as an aid to decision making. Furthermore, Dyson *et al*. (2007) argued that strategy tools can be used within the strategy development process to 'rehearse strategy' and facilitate creating and testing strategic initiatives, instead of '*passively awaiting feedback signals that implementation is off course*'.

The environments in which organizations operate produce both opportunities and threats. Organizations bent on survival and success in the dynamic business environment need to use appropriate management tools that can identify emerging issues that are important for their

businesses. If the cumulative changes in the economic, technological, social, political and cultural environments remain unnoticed by a company's managers until it is too late to respond, the problems which they create may be insuperable (Large, 1992).

CONDITIONS IN WHICH CREATIVE THINKING IS REQUIRED MOST

The need for creative thinking often becomes paramount when *paradigm shift* occurs or is likely to occur soon.

It is argued that in an organizational sense creative thinking is required most when there is a lack of consensus regarding goals and also a lack of understanding about cause–effect relationships (Thompson, 1967). Disagreement often occurs when problems arise which have not been previously encountered and when outcomes and goals are uncertain. The need for creative thinking often becomes paramount when *paradigm shift* occurs or is likely to occur soon.

CREATIVITY IN ACTION

Who could have envisaged fifty years ago the retail development complexity of travel agents or the shopping complexes at airports such as London Heathrow, London Gatwick, Manchester International, Amsterdam, Kuala Lumpur, Munich, Madrid and Barcelona – to mention just a few. Indeed, some of the major airport complexes have developed almost into miniature shopping centres in their own right. The planners of such development complexes continue to exercise their creative problem solving skills in order to find more ways of satisfying their customer *en route* to various destinations.

The airlines themselves have become more creative in their thinking and in the way in which they approach problems. Not everyone, however, is always happy with the outcome of such creativity, as was evidenced in the reaction of some distinguished members of the public to the novel tailfin logo adopted by British Airways in 1998. In recent years airlines have come to pay more attention to the logo on their aircraft, seeing it as an important way of portraying their brand image.

Traditionally, Air Canada planes were white with bright red lettering and a big red maple leaf on the tail. However, research showed that the strong image was a real problem with Canadian users because of its association with government bureaucracy. Apparently, Canadians adore Canada but are much less favourably disposed to its government. Canadians tend to attribute a host of hearth-and-home values to themselves and their country: compassion, friendliness, a progressive outlook and a law-abiding nature. It was decided to emphasize these associations while de-emphasizing the government part. The maple leaf was kept but it was rendered in a more natural earthy red on a new evergreen tail – the reasoning being that the stark red-on-white

contrast was too much associated with the government image. The overall effect makes the new planes look a lot less like flying Mounties.

British Airways, too, has had its dose of creative thinking. It was revitalized by Sir Colin Marshall in the 1980s with a particular directive to focus on the customer. An effective internal marketing programme was based on the notion that employees would not treat customers better until they themselves were treated better. Marshall established profit sharing and a two-day seminar at which attendance was compulsory for all employees. The seminar focused on all relationships employees might have with other employees, bosses, customers or even family members. It was felt that the programme contributed significantly to raising staff morale and to better customer relations. Among the creative ideas to emerge was the installation of TV cameras in passenger disembarking areas enabling them to register complaints immediately on landing. These are then dealt with in a timely manner, and the customer is informed of what action is taken. Changing the image of British Airways was also something to which attention was given. New uniforms for staff, new exterior paint on planes, new interiors for planes, new passenger lounges and an expensive advertising campaign were employed to promote the new image of British Airways. The airline business is immensely competitive, and all companies have to strive to find ways of identifying means of establishing a competitive advantage for themselves. This is often sought by trying to improve the quality of service offered in relationship to the price charged or through the nature of the *augmented service* offered.

Service quality includes such things as:

1 Tangibles. Do the physical facilities, equipment and appearance of personnel associated with the service promote confidence in the quality of the service?
2 Reliability. Is there evidence of an ability to perform the promised service properly the first time?
3 Responsiveness. Is there a willingness to help customers and provide prompt service?
4 Competence. Do the personnel possess knowledge and skill, and have they an ability to convey trust and confidence?
5 Credibility/trustworthiness. Is the organization trustworthy and does it always deliver what it promises to deliver?
6 Empathy. Does the provider of the service provide its customers with individual attention?
7 Courtesy. Do customers perceive the service provided to be a friendly one?
8 Communication. Are customers kept informed about the service offered in the language they can understand? Do the providers of the service listen to what the customers have to say?

The *augmented service* refers to activities or additional services that are tangential to the physical transportation of customers from the point of departure to their destination.

Question

In what ways might airlines offer an augmented service to customers? Can you think of any which are not currently offered?

Such is the nature of the situation created by environmental turbulence that it has been used as a creative force for change. A research project (Martin *et al.*, 2005) on the changing nature of leadership showed 84 per cent of the 300 executives and senior managers surveyed believed that the definition of effective leadership has changed in the previous five years as business challenges grew more complex.

Palus and Horth (2002) argued that managers need to scan information quickly and make rapid judgements. They observed that when managers are faced with a complex problem, they tend to spend only 10 per cent of the available time examining a problem and its context, while 90 per cent of their time is spent on generating a solution. Perhaps not surprisingly, the result is that managers often end up solving the wrong problem. Palus and Horth suggest several approaches for breaking free of our habitual ways of seeing in order to become innovators:

- Alter perspective radically by changing one's point of view.
- Ask for the opinions of others and collaborate with others who have the skills and perspectives one lacks.
- Use questions to take aim at the root of the issues faced.
- Spend time among customers, constituencies and competitors to gain new perspectives.
- Keep track of ideas.
- Change the pace of attention to information and knowledge acquired.

These and other suggested approaches are considered in later chapters of the book.

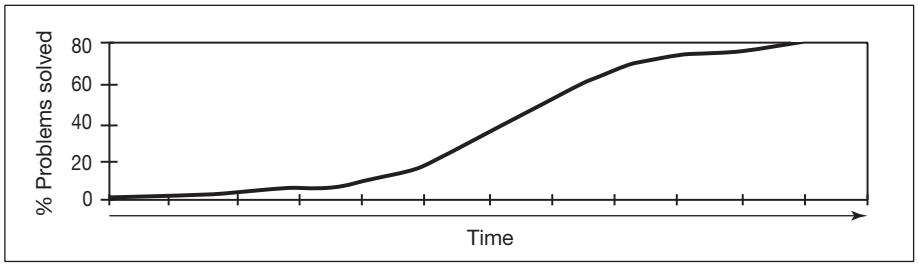
PARADIGM SHIFT

A paradigm is a set of rules and regulations that guide our actions when solving problems.

A paradigm is a set of rules and regulations that define boundaries and help us to be successful within those boundaries, where success is measured by the problems solved using these rules and regulations. Paradigm shifts are different from continuous improvement. Examples include: going from donkey cart or horse-drawn carriage to car or travelling long distances by aeroplane instead of by bus or ocean liner. Paradigm shifts have made it possible to send complex, accurate messages over great distances: they have facilitated moving from primitive methods such as shouting, smoke, fire, drum, flag signals to highly sophisticated mechanisms such as telegraph, telephone, fax, live video by wire, optical fibre, and communications satellite.

Paradigms have life-cycles, and towards the end of the life-cycle problem solving becomes more costly, more time-consuming and less satisfactory (Figure 1.1). Solutions no longer fit the larger context because of changes that have occurred elsewhere. Nowhere is this better illustrated than in the case of needing to improve parts of the UK motorway network. Widening sections involves not only millions of pounds of taxpayers' money but also places an additional unestimated burden on motorists in terms of long delays, excessive fuel consumption while negotiating the sections

involved and psychological stress which is difficult even to estimate. The paradigm of widening busy stretches of motorways must surely be in the decline stages of its life-cycle. A paradigm shift is required urgently.



■ Towards the end of the life-cycle, problem solving becomes more costly, more time-consuming and less satisfactory. Solutions no longer fit the larger context because of changes that have occurred elsewhere.

Figure 1.1 *Paradigm life-cycle curve*

Paradigm shifts require a change in perspective on the subject. Blinkered thinking associated with holding too rigorously to a paradigm can lead to missing opportunities and overlooking threats which may have a critical impact on a business. Two competitors may see the same opportunity or threat in different ways, and the one that is able to make the best response can gain a sustainable competitive advantage over its rival.

The process of paradigm shift can be encouraged and effected early through the use of creative thinking. Creative thinking brings into place notions and ideas that would not normally be contemplated in problem solving. Creative problem solving methods make extensive use of techniques and approaches that help to find solutions to recalcitrant open-ended problems.

FROM STEAM-DRIVEN TO PETROL-DRIVEN CARS

The steam car was a failure as a road vehicle, for it proved too heavy and its control too difficult for this purpose. The electric motor seemed to offer one possible solution, while other would-be inventors saw the gas-powered engine as providing a possible solution. In 1863, Etienne Lenoir built an engine which used ordinary coal gas and even made a car which he drove using his invented engine as the power source. Siegfried Marcus is credited with using petrol vapour for the first time in an engine to drive a car through the streets of Vienna in 1875. However, it was considered to be such a noisy vehicle that the police banned its further use on the public highways. Very much ahead of his time, Edward Butler produced a petrol-driven tricycle, with a two-cylinder motor, a carburettor and ignition through a spark plug produced by a dynamo, in London in 1884. The 'Red Flags Laws' operated at that time in England restricting speed to 4 m.p.h. on the open road and 2 m.p.h. in built-up areas. The laws laid down that a vehicle should be accompanied by a man walking before it carrying a red flag and warning people of the oncoming vehicle. They were a

death sentence for all such inventions. In Germany, however, August Nikolaus Otto did much to advance the development of the gas engine in the 1870s – although it was powered from a mains supply.

Karl Benz gained acquaintance with the *boneshaker* bicycle at an early age, and this prompted him to think of ways of mechanizing road transport. He became interested in Lenoir's gas engine, made himself aware of recent developments in the field, and concluded that some petroleum derivative might be suitable as fuel. He also felt that this would be comparatively cheap since extensive oil reserves had been discovered in Pennsylvania in the 1850s.

In 1885, Benz produced his first car. It was a tricycle with a four-stroke engine using the Otto principle. He invented his own electrical ignition system and surrounded the engine with a mantle containing cold water for cooling. Transmission of the drive to the rear wheels was accomplished with chains and incorporated a primitive clutch.

Questions

1 In the light of the above, consider just how the paradigm shift (from horse-driven vehicle to mechanized road vehicle) occurred in this instance.
2 What lessons are to be drawn from this account?

CHARACTERISTICS OF CREATIVE THINKING AND CREATIVE THINKERS

Measures of intelligence do not explain creative ability. Highly productive creative thinkers form more novel combinations than the merely talented. If one particular style of thought stands out about highly productive creative thinking, it is the ability to make juxtapositions between dissimilar subjects. It is a facility to see things to which others are blind.

It would be useful to understand the thinking processes which were involved in producing the *Mona Lisa*, as well as the ones that produced the theory of relativity. It would be more than useful to appreciate what characterizes the thinking strategies of people such as Einstein, Edison, Leonardo da Vinci and Mozart.

Efforts have been made to establish the links between measures of intelligence and highly productive creative thinking, but measures of intelligence themselves are insufficient to explain it. Psychologists reached the conclusion that creativity is not the same as intelligence. A person can be far more creative than he or she is intelligent, or far more intelligent than creative.

Most people, given data or some problem, can work out the conventional response. Typically, people think *reproductively*: that is, on the basis of similar problems encountered in the past (see Chapter 3 for the development of this notion). When confronted with problems, we make use of