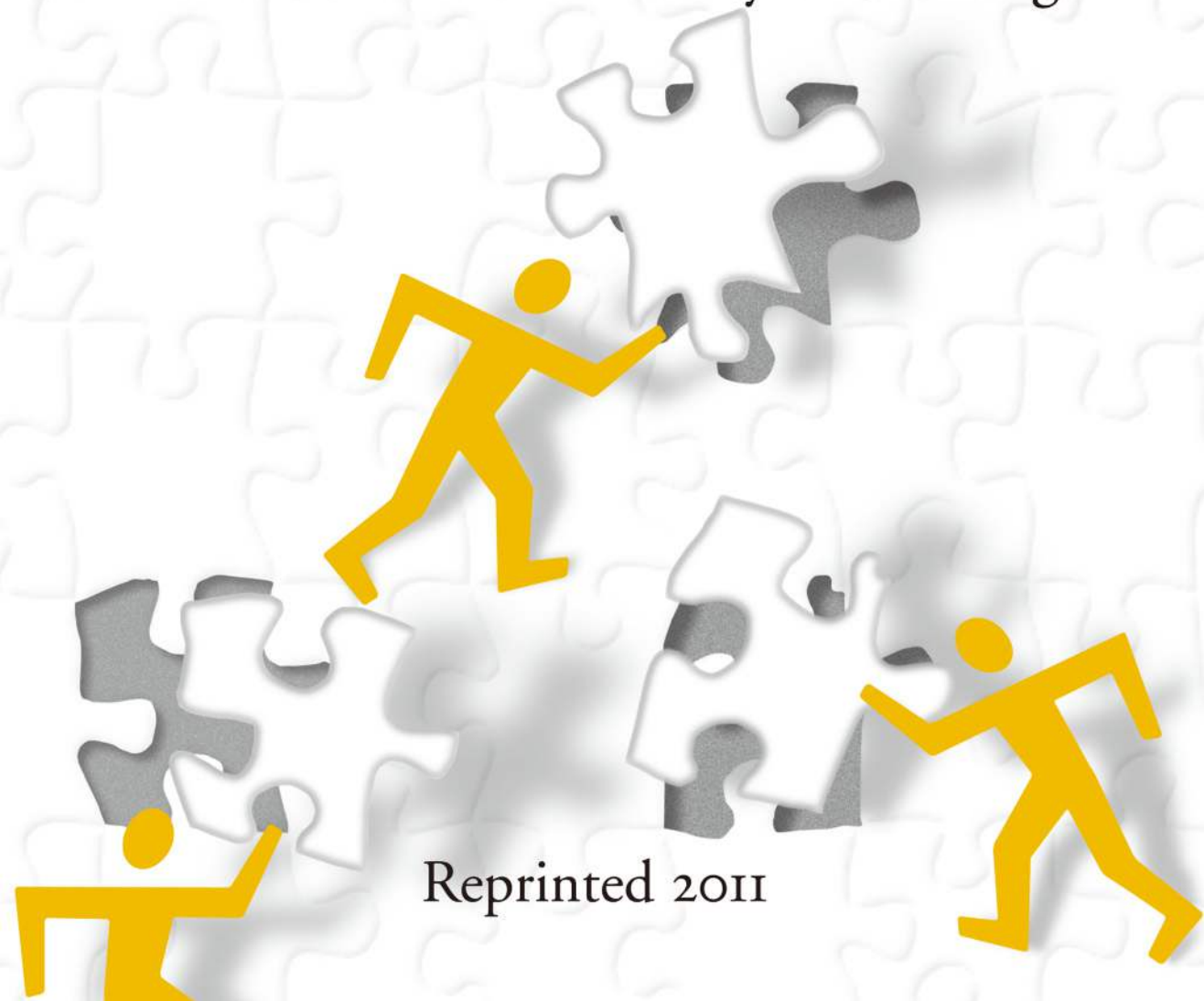
M.J. Kirton

Adaption-Innovation

In the Context of Diversity and Change



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Adaption-Innovation

Adaption-Innovation theory (A-I theory) is a model of problem solving and creativity, which aims to increase collaboration and reduce conflict within groups. A-I theory and the associated Kirton Adaption-Innovation Inventory (KAI) have been extensively researched and are increasingly used as tools for teambuilding and personnel management. In *Adaption-Innovation: In the context of diversity and change*, Dr Kirton outlines the central concepts of the theory, including the processes of problem solving, decision making, and creativity. In addition, Dr Kirton focuses on how wide diversity within a team affects problem solving, creativity, and effective management of change, as well as offering practical information for those helping diverse teams succeed in today's demanding climate.

This timely and comprehensive text is written for anyone who wants to know more about problem solving, thinking style, and creativity. As such it will appeal to a broad range of people, from human resource managers, business consultants, and group trainers to students of psychology, business, management, sociology, education, and politics.

Dr M. J. Kirton, D.Sc., AFBPsS, is the director and founder of the Occupational Research Centre, with many years' experience in academia and management. He originated the Adaption-Innovation Theory and its measure KAI. He was awarded a DSc by the Council for National Academic Awards in 1991 for his work on Adaption-Innovation.

This book is the result of a complete reformation of what we know of creativity. The theory is well-founded within biological and psychological research, the measure is one of the most psychometrically sound instruments available, and the implications are immense for fields as varied as human resources management, strategic planning and the marketing of new consumer goods. Dr Kirton's treatment shows erudition, judgement and painstaking attention to scientific detail.

Professor Gordon Foxall, *Distinguished Research Professor, Cardiff University*

Developing our organization is critical to continued business vitality, and effective change management is the underlying focus in our daily work. KAI theory, explained richly and in depth by Dr Kirton in *Adaption-Innovation*, provides clear insight into two distinct approaches to problem solving via the Adaptive (A) and Innovative (I) cognitive styles. Successfully managing and applying this diversity of style reaps great rewards and expedites positive organizational change and sustainability.

Charles Allen, *Senior Vice President, Honda R&D Americas*

In these times of globalization and rapid change Kirton's Adaption-Innovation (KAI) theory provides a framework that clearly explains the need for the changing roles of leadership including those in education, business and government. Along with acting as catalysis to changes in leadership paradigm KAI provides methods of managing team problem solving diversity that result in more successful solutions for the problems plaguing the world today.

Dr William H. Riffee, *Dean of Pharmacy and* **Dr Cheri Winton Brodeur**, *Institute of Food and Agricultural Sciences, University of Florida*

The notion that as a problem solver, I am an agent of change and a leader resonates with students enrolled in our leadership education courses. It is upon this principle of A-I theory that students become engaged in learning about problem solving so they may become better leaders. Dr Kirton's connection between problem solving and leadership is unmistakable as the problems our future leaders face will become more complex and require diverse problem-solving styles. If you are a leadership educator, you need to consider incorporating this book into your leadership programming.

Rick Rudd, Ph.D., *Department Head and* **Curtis Friedel, Ph.D.**, *Assistant Professor, Agricultural and Extension Education, Virginia Tech.*

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In the Context of Diversity and Change

M. J. Kirton

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To Veronica

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1 Introduction

A GUIDING OUTLINE

This book offers new insights and understanding for both managers and academics into people's preferred thinking styles and how they affect ways of doing things, their outcomes, and other people, both in organisations and elsewhere. In most organisations individuals are still mostly considered as technically knowledgeable process boxes, where given the right inputs, training, and environmental conditions the required outputs are expected to appear, working well, smoothly, and on time. There is still little consideration of the match between the different ways in which all people think, problem solve, and create and the demands and constraints of efficient management, the organisational environment, and others with whom they work. These different ways of problem solving encompass a range between bringing about change by working with and within the prevailing paradigm and by first altering this structure in order to bring about desired change.

Thinking style is explored, amply supported by research, and located in problem solving as a whole. Then problem solving is set in the wider, entirely practical, context of the management of diversity (including the diversity of styles) and of change. In this wider setting, problem-solving leadership depends less on the technical expertise of a select few and more upon the selection of appropriate groups that can *collectively solve* critical, complex problems, in challenging environments, *aided* by problem-solving leaders. To meet the demands made of managers in today's climate, these leaders require not only the technical expertise to hold the respect of their teams but also knowledge of the problem-solving process and of problem solvers. This notion is currently becoming better considered, as when Khurana (2002) warns against over-reliance on the charismatic superstar: 'When a company is struggling [its directors] will not be satisfied with an executive who is merely talented and experienced. Companies now want leaders.'

This section gives a resume of the ground to be covered. The rest of the chapter reviews a study that became one seminal influence in the development of Adaption-Innovation Theory and its wider setting. It is based on down-to-earth experience and so acts as an introduction, first to the theoretical aspects, and then to the practical considerations, to which we return later in this book.

Adaption-Innovation Theory (A-I theory) relates to thinking style – usually referred to in the literature as cognitive style. This theory explores and describes preferred individual differences in the way humans solve problems; its related psychometric inventory locates individuals on a continuum ranging from high adaption to high innovation.

Thinking is the means by which we solve problems and are creative (whatever the distinctions between these two terms may be). Every living thing has to manage the changing world about it and acquire those things that it needs to survive. If enough individuals of a species survive long enough to reproduce successfully, that species continues to survive. This is not easy: The species that exist today are reckoned to be but 1% of all that have ever lived; we are among the few survivors over the billions of years that life has existed. Mankind, one of the latest arrivals, must also manage change and diversity or perish. In one form or another, whether understood by the individual or not, problem solving is the key to life. Every species does this differently.

This book examines thinking style in the context of problem solving, the key to survival, of which it is an element. In doing so, some elements of problem solving – level (capacity), motive, and perceived opportunity – are dealt with in depth and others more lightly, such as learning, attitude, belief, and group dynamics. Style within problem solving is then set into the wider context of the management of change and diversity. The examples that illustrate the relationships of these elements are drawn mainly from biology, psychology, sociology, politics, management, military history, science, and the arts. This range shows how the brain, unaltered for a hundred millennia, solves a vast diversity of problems in much the same general way. However, every individual is also unique, as each brain operates with small, but vital, characteristic variations. This diversity of problem solver is at once an advantage and an added problem: How to combine to solve those problems that cannot be solved alone, yet how to manage people unlike us. This and a number of other themes are threaded through this book. The paradox of structure, from personal experience to social paradigm, is another; without it we cannot think, but although enabling, it is also limiting. We each solve this paradox, as we solve every other problem, differently.

The breadth of the setting underlines how such seemingly small differences in thinking between people (mankind contains no subspecies) have been exploited so successfully. In fact, so successfully has the human brain worked that most of the trickiest problems it now faces are as a result of its success and our growing expectation of further success. The standards required of today's problem solvers would surely have left mediaeval monarchs amazed – the nature of progress is truly catalytic, feeding with increasing rapidity on its own success. Not surprisingly, perhaps, the theme of the next chapter is that problem solving is the key to all life. The more we understand problem solving and the problem solver the better off we might be; such added knowledge can be put to good advantage, particularly in problem-solving leadership.

The foundations must first be understood. All forms of life, mankind included, have evolved a structure that fits all their survival needs, e.g., finding and absorbing appropriate nutrients. This structure is also limiting, e.g., the eyes that are good in daylight are poor in half-light. Mankind has become expert in overcoming many limitations, but the underlying structure remains the same. The astronaut may get to the moon but still walks to the space vehicle; the image that is enhanced by the telescope passes through the eye developed many millions of years ago to the same model of brain that made our tools in the stone age. So problem solving needs to exploit but not ignore these limits; mankind has developed the greatest facility of working round natural limits that the world has yet experienced.

The more advanced life forms have developed instincts. Instincts are so complex (like building a nest) that they transcend the more primitive built-in biomechanical responses and yet are so rigid that each one is immediately recognisable by experts as

belonging to a particular species. Each represents a whole problem-solving process: problem identification, solution selection, and implementation. The survival value of instincts is immense, for they can all operate without learning; indeed, without ever having been seen used by another. Yet they operate almost perfectly on the first occasion they are used, even if learning can be added on to them to enhance the base response they provide. Their weakness is that they are hard wired: Once triggered, every individual must operate in the same way and changes to instincts can only come about by breeding, not by thinking. Using this precise biological definition, mankind is unique in having no instincts. When we perceive a danger ahead while driving, we do not 'brake by instinct'. We have learned to do so – perhaps so well that it is now a conditioned reflex – but all complex problem-solving response is, nevertheless, learned. What mankind needs to know must be taught.

Learned problem solving, well developed in all higher-order species, offers the widest potential range of responses and the greatest problem-solving flexibility. The advantages of problem solving are obvious, for mankind's achievements are huge compared to any other organism (indeed, most of the problems we currently face are of our own making), but the expense is high. Everything we do, except for those inbuilt structures, has to be learned through experience and a great deal of chatter: who our enemies are, what to eat, how to get it, how to mate, how to give birth, or how to nurture our young. As learning takes time and practice, our young are more vulnerable, for longer, than those of any other species. In order to survive we need continually to learn. A-I theory emphasises two key issues: (a) when we problem solve we are limited by the way we are built (e.g., our intelligence; no one has endless capacity or flexibility) but we have no instinct to help or hinder us; (b) all of us are intelligent and creative, at different levels and with different styles, and, therefore, all of us are capable of problem solving, as long as there is both motive and opportunity.

We are indebted to the ancient Greeks for usefully dividing knowledge into that of physics and metaphysics, thereby allowing us to study and reveal understanding of nature's laws in each area with better precision. From physics and chemistry comes the discipline of biology, from which, in turn, emerges the discipline that studies behaviour – psychology. From the study of the problem solving of the human mind emerges most of the other disciplines. A-I theory, therefore, relates to many very different topics, each closely interlinked with the others, stretching from biology across psychology into sociology and on into every area of human problem solving – from anthropology and the progress of science, business, and government, warfare and conflict, to the writing of music and the teaching of art. The same brain, using the same functions, tackles the many kinds of problem it has to solve from whichever discipline they emerge. The distinctions may only be how familiar the problem is, the amount of effort needed to master it, and the degree of satisfaction derived from its resolution. In understanding problem solvers it is useful, then, to view the applicability of any hypothesis, finding, or derived theoretical notion over a wide range of human activity. If they illuminate widely over incident, time, and culture then they are likely to be revealing of problem solvers generally.

It is an added complication that there are many other theories and fields of study that relate to problem solving, including popular but untested beliefs, practices, and plain muddles, particularly those involving such trendy terms as 'creativity and innovation' or 'instinct'. Terms like these, that are notoriously hard to define and harder to measure reliably, either need to be better defined or avoided. Instinct, for example,

is defined here so that it is not mistaken either for the way the *structure* of the brain works or for learning. This is rather like the distinction between the hard wiring of the computer (what it is designed to do), the software (built-in problem-solving programs), and the operator's own programs. The value of these distinctions is that we can understand better the limits of the brain's function and learn better to allow for them whilst learning to work round them. Creativity, to take a second example, is treated as a subset of problem solving: useful in general discussion but not much use, at present at any rate, in measurement. Only one term is needed (the brain does not appear to distinguish between them) for serious matters, such as management, counselling, or research. We can, for these purposes, just rely on the term problem solving; this should help us to obtain clearer hypotheses to test and, possibly, clearer answers to our questions.

The core of the theory

Understanding Adaption-Innovation

The Adaption-Innovation Theory is founded on the assumption that all people solve problems and are creative. This theory is directly concerned only with style; with *how* people solve problems. Both potential capacity (intelligence or talent) and learned levels (such as management competence) are completely independent characteristics and assessed by other measures. This means that innovators and adaptors can each be found at every kind of these levels – from the highest to the lowest. In addition, the terms 'more adaptive' or 'more innovative' are more precise than 'adaptors' and 'innovators', for the theory describes a normally distributed continuous range and not just two types. The more adaptive prefer their problems to be associated with more structure, and with more of this structure consensually agreed, than those who are more innovative. The more innovative are more tolerant, at least while in the pursuit of a solution, of a looser guiding structure. However, all brains need such structure or they cannot operate. Indeed, at the very core of the brain's success is the amount of structure it can accumulate and use well in solving the problems it perceives as needing to be solved. Just one example of structure is language – no other organism could have written this text or be able to read it.

Many other structures are required, e.g., the preferred style with which we solve problems, the content of our memory, and our array of skills. Other vital guidelines that are built up by learning are our attitudes and beliefs, which allow us to access information into understood patterns. One of the key notions of the book is the paradox of structure: that it is, at one and the same time, both enabling and limiting. We endeavour constantly to exploit structure and manipulate its limits. Adaptors and innovators do so differently. One way of summing up these differences is to say that the more adaptive prefer to solve problems by the use of rules and the more innovative do so despite the rules. Here, 'rules' are used to represent all cognitive structures. Examples of other terms are theories, policies, precedents, terms of reference, and paradigms. The argument also advanced, supported by research, is that these differences in preferred style are stable but that we nudge the limits they impose by coping behaviour.

Another key element in the theory is that only individuals think. Brains cannot be linked together like computers. Whenever I ask you for help, and you agree, we are

each instantly faced with two problems. Problem A is the reason we have formed the group – the reason for the formation of any group of living creatures – for mutual self-help. But we have also acquired Problem B; how to manage each other – all without aid from instinct, as is explored fully in a following chapter. The main thought that emerges is that unsuccessful problem-solving teams spend more energy on Problem B than Problem A. Yet we need each other; there are too many limits on individuals working alone for them to solve most large, complex problems. Another thought explored is that such diversity of problems require, for their resolution, a diversity of resources, *including* a diversity of problem solvers (which brings us back to Problem B). Adaption-Innovation is just such a diversity of resource. The more diversity of resources at a team's disposal, the greater is its potential to resolve an array of problems. But stockpiling diversity is an added burden, for diverse teams are more difficult to manage. In the case of style, this is because each individual's preference can also be seen to have disadvantages and to be a potential source of cost, friction, and distraction. Each individual is a unique diversity (or, strictly, a complex of diversities) and, within a group, has to face this problem in two ways: How to present one's own diversity as more useful than expensive and, for the same reason, to be tolerant of another's similar presentation. The whole range of diversity needs to be managed well for the common good. If not, then although such management of change may be efficient, it will be narrow. It will be argued that the adherents of competing narrow views are liable to produce a pendulum of vacillation instead of a progression of change. Such narrow-ranging views are likely to create resistors to change.

Defining cognitive style

The first time anyone becomes aware of cognitive style is when a predictable difference is noticed between the ways (manner, style) in which any two people appear to go about solving similar problems. A person behaving persistently differently from oneself may be just an intriguing fact, or turn out to be useful or even irritating. These are marked tendencies, within a single continuum, which are so stable that they are liable to persist even in circumstances in which it appears, at least to others, to be a disadvantage. A curiosity is that most such disadvantages that emerge are less noticeable in oneself than in others.

One difference is in the individual's preferred direction of focus. Adaptors more readily anticipate challenges and threats from within the system (often devising, in good time, plans to economise, downsize, etc.), whereas innovators are more ready to anticipate events that might beckon or threaten from outside, such as the earlier signs of changing taste and markets or significant advances in technology that have not yet been fully exploited. In research, it was noted that every manager tended not only to miss some cues that were picked up by others, but also found others' warnings irritating and distracting 'to the real issues' (i.e., the ones *they* could see clearly). Often the cues missed or noted fell into a pattern that suggested the influence of differences in style rather than in skill.

However, there is a marked tendency for people to attribute differences in style (indeed, any differences between them and others) as level differences. The principal reason may be that such judgements rarely take enough of the relevant data into account. It is not clear to any observer making the judgements whether the characteristic is inbuilt or learnt, whether it can be readily varied to accord with circumstance,

whether we are all liable to the same kind of tendency (erring by no lesser degree but in different ways, on different occasions), or whether there is an unsuspected advantage to the group for having within it people who have such different attributes. These are rarely serious topics of conversation for managers; yet this knowledge is at the core of problem-solving leadership. Despite the fact that such differences are often erroneously seen as a deficiency of level (ability or capacity), the early work in A-I stated simply that managers' capacities do not account for these differences in approaching problems; they seem to be differences of style. It seems a simple issue, but it has become more and more obvious that this sharp distinction between style and capacity is not wholly understood, much less wholly accepted. The confusion between level and style seems to contribute significantly to difficulties that have above been dubbed as Problem B, so this confusion is well worth untangling. The confusion spreads when such terms as 'creativity and innovation' or 'change agent' are used to imply that innovation alone will solve all problems and only a few of us can bring about change. Such terms are divisive, creating 'resistors to change' among those who think differently but just as clearly and among those who are simply made to feel excluded.

Description of Adaption-Innovation

So far, this description has been in wide terms and in the context of general problem solving – the way the problem solver relates to and manages cognitive structure, although any structure perceived by the brain has to be converted into cognitive structure if it is to be used to problem solve. The A-I characteristic is one such structure, which with other influences on behaviour, like attitudes, plus those behaviours, make up the domain of personality. The rest of this chapter is devoted to this link, listing, in theory supported by research, the many different traits relating to cognitive style such as: risk-taking, dogmatism, tolerance of ambiguity, extraversion, conservatism, flexibility, etc., but excluding such traits as anxiety, neuroticism, or any other element of cognitive affect. This interrelationship with so large an array suggests a continuum at the level of a dimension of personality.

To assist the reader a schema has been devised offering an overview of these terms in the context of brain function. As with all schemata, this is a simplification of a complex reality, which one hopes, nevertheless, may give a useful overview of the brain's interrelated functions. Within this embracing structure, the key elements of the brain's function have been entered as if they were departments of a business enterprise, devoted to its own survival. Style appears in the 'planning' department, taking instruction from the boardroom – the department of cognitive affect that decides what problem is to be tackled and what kind of solution will satisfy. A third 'backroom' department of cognitive resource processes (through learning) and then stores all experience upon which the other two rely for past reliable information. These elements of cognitive function are stable, characteristic influences on behaviour, which together with stable characteristics of behaviour make up an individual's personality.

The wider implications

Finally, it can be salutary to reflect that only by the use of this one same, unaltered brain have all the problems of human survival been solved. Like modern boardrooms and governments, whole populations in the Fertile Crescent, the West, China, America,

and Australia have had periods of technological advance, stagnation, and even retreat – variations that often have been attributed to the high or low capacity of the entire population. In the past, the fate of defeated populations attracted little sympathy among the victors. In many quarters today, an alternative extreme view is that the winning groups of the past are tinged with evil and the losers have never done wrong. However, these phenomena need to be seen in a cooler perspective, or the righting of perceived ancient wrongs may cause yet more damage. The indubitable backdrop fact is that all organisms (alone or in groups) succeed at the expense of others – all change, however much it might be deemed as good by the cognoscenti, destroys something. How can we ensure the values of competition yet avoid the disasters of aggression? A brief anthropological review suggests that basic opportunities for social advancement (the natural local occurrence of useful plants, animals, or materials) were available in very different amounts in different environments – with the Fertile Crescent and China being heavily favoured. The argument advanced is that opportunity, or lack of it, must be a prime factor in differences of advancement of whole populations. This is also true within any group or culture. But there is another factor: Some changes that are on offer (or when first on offer) may appear more as threats than chances not to be missed. As with individuals, so with cultures (which are the reflections of their members' shared structures): Different environments offer varying opportunities at differently perceived cost, to be managed, then exploited. People, alone or in groups, among hunter-gatherers or in boardrooms, are constantly faced with choices and more of us need, in today's increasingly complex world and with increasing individual expectation (at ever lower human cost), better understanding of the principles by which they are made. This is core knowledge for problem-solving leadership at every stage of opportunity exploitation – whenever revealed, whenever sought or whenever it needs to be made.

The winners among groups of people may start off with only a small advantage over others, but change is catalytic in its nature – one change leading to an advantage is the base for another change that leads to greater advantage. Gradually, this spiral of change becomes irresistible, giving overwhelming power to those in the lead. All organisms succeed at the expense of others. The winners take over space and resources for their own ends; others, even subsets of their own kind (unless protected by an instinct mankind does not possess) can be killed, eaten, enslaved, absorbed (lose identity) or brushed aside into unfashionable addresses. Mankind has tried all this with other organisms and within its own barely defined subsets. The process of collaborative problem solving needs to be better understood so that it can be applied more insightfully. We all need to understand better how to manage diversity so that we can manage change more effectively. To manage diversity one must first accept that it exists; every individual is unique and so is a minority of one. Each person needs to consider the balance of the costs against the advantages of uniqueness to a group's survival; that every right an individual claims needs to be offset by obligation, for rights without obligations are accorded only as charity, not as a part of an equal mutual exchange. These are not just matters of ethics but of mutual survival, because:

- a diversity of problem solvers is required to solve a diversity of problems;
- style is a diversity in the very core of each individual's problem-solving process;
- managing diversity is a key to achieving required change efficiently.

Summary of key points and glossary of key terms

- Problem solving is the key to life.
- All people problem solve (creativity is a subset of problem solving).
- Problem solving creates change – every individual is a 'change agent'.
- All individuals evaluate each change opportunity against their cost and advantage.
- Adaption-Innovation is the stable, preferred style within which an individual solves problems; it relates to the way people manage (cognitive) structure.
- Coping behaviour permits departure from preferred style, at a cost.
- Style is not correlated with any form of level.
- A diversity of problem solvers, deploying a diversity of resources, is needed to solve life's diversity of problems, many an outcome of mankind's success.
- Difference in style is one of the many kinds of diversities that problem solvers need to manage well; all our diversities and the ways they are managed make up our personalities.
- Individual diversity is at the start point of creating the specialist.
- If one cannot manage diversity well, one cannot manage change both widely and well.
- Managing change narrowly and well is efficient, until the problem range being tackled widens, then past success may make us slow to change (accept the cost to widen).
- How much diversity is needed in a team is dependent on the range of problems it is solving. Too little diversity leads to failure; too much is costly to keep; the problem is in defining the term 'too'.
- If an in-group mismanages the diversities within the wider group, it may 'create' resistors to (all of the in-group's proposed) change.
- All people are unique – therefore, every person is in a minority of one. To collaborate, individuals need to offer their diversity as a resource without destabilising the group.
- Every time a person shares a problem with another, each acquires two problems – Problem A, the prime problem for which they formed the team, and Problem B, managing each other's diversity.
- Problem A should take up more of the collective energy than Problem B. A prime aim of leadership is to ensure, e.g., that diversity training should not aim to correct the past but to increase future mutual benefit.
- Styles of leadership should be adopted as roles selected to match the problem.
- Paradox of structure: No cognitive structure – no thought, no problem solving. Too much structure and problem solving becomes inelastic and inefficient.
- In nature, failure is the norm. Very few of all the species that once lived still do – a warning we do well to keep in mind.

Problems have become so complex, and the penalty for not solving many of them so high, that every individual needs to study the problem solver as one more problem needing to be solved. Experts alone cannot be concerned with this problem; their task is to help others to understand it also. The core lesson is that today the problems of survival directly concern us all, hence the notion of problem-solving leadership.

A BACKGROUND STUDY

Aim

The rest of this chapter is a synopsis of a study, Management Initiative, which had a formative influence in starting the work on Adaption-Innovation and its measure. This study, through the accumulation of experience in completing it and through the analysis of its results and residual problems, both at the time and over many following years, helped define the Adaption-Innovation concept and keep it oriented to practical use. Additionally, it helped provide items that eventually gave rise to the measure, which has provided the many instances of support of the theory's assumptions. There is a third reason for it being reported here in some detail: Its lessons were not only instructive, but they also proved to be applicable to many fields of thought and endeavour, both past and present; because of this they form one of a small number of themes that hold together the many issues explored in this book. The study helped show that that the brain operates in all humans in much the same overall way, over event and time, given only that there are within this common frame individual variations that separate any one human from any other. These variations, albeit small, are highly significant when used in collaboration.

After the study and its findings are outlined, its stimulating residual puzzles are revealed. At the end of this case study there is a review of the information learnt and an indication of its link with A-I theory. There is additional information, particularly for managers, in Appendix 1. The study's prime aim was to reveal a process of corporate initiative so as to understand group dynamics.

Method

The methods for the original collection of data study were as follows.

- Select a number of willing companies. Those chosen were medium–small (less than 1000 employees) or semiautonomous divisions of larger companies, of about the same size.
- Select and study a number of significant examples of recent corporate initiative. These had to be of 'large group' size, i.e., involve the whole of a large department or parts of several departments, involving several key people from start to finish.
- Read all the relevant papers on each of the examples selected. The companies selected were very open – it is successful companies who tend to allow in researchers because they are anxious to learn; unsuccessful companies tend to keep them out.
- Interview everyone who had taken a managerial role in each one at least once.
- Feed back the notes recording this input to key managers for their comment. As a result of the feedback interviews, more was learnt but many managers also greatly improved their own knowledge of what had happened!

These mini-histories of change were then sifted through until it was possible to produce an 'idealised template' or schema of how, in general, management initiative seemed to work. Box 1 shows this dynamic schema, or what later will be described as

Box 1 Management Initiative process

Perception of the Problem
Analysis of the Problem
Analysis of the Solution
Agreement for Change
Acceptance for Change
Implementation

a 'process'. A process is defined as a schematic map of how, ideally, some sequence of behaviour runs its course. In real life the process is not so smooth or clear cut. No schema, such as a road map, tells you all: what is one's means of transport, how good it might be; if the roads are in good repair, what are the weather conditions; how often one stops for a meal or loses one's way! Stripped of cognitive deviations, errors, and iterations an idealised map emerges; in this case, a schema of how a class of problem solving emerges.

Box 1 shows the elements of the management initiative process as it emerged from the analysis of the large amount of collated information collected in the study[1]. Below is a summary of what each of these stages covers. This summary is of interest in its own right as well as being a formative influence on the thinking that led to the Adaption-Innovation notion. It shows that however theoretical and abstract the A-I theory appears to be now, it emerged from the analyses of problems that had just been faced, and for the most part resolved, by people at work. More revealing as an influence on A-I theory are the details of the problems (outlined in Residual Problems) that were not solved at the time. Understanding them better later was what helped shape the theory.

Perception of the problem

The initial brief was to ignore what sort of person perceived the problem or how the problem emerged in the mind of an individual. The main concern was to be with the process as a group phenomenon, so the study of each problem began when its existence was made public, was noted, and became a group concern.

The person who perceived the problem had to persuade the group that it existed and was worthy of resolution, winning over others, sometimes at a stroke, sometimes gradually, until assent was achieved. In short, the problem needed to be 'established' before the group would start to solve it. For the perceiver this could be a problem in itself. Although not invariable, it was not infrequent that the perceiver was, to use a biblical turn of phrase, a 'voice crying in the wilderness.' However, the terms under which the study was undertaken were to 'concentrate on the social process' so that it could be better understood and not to concentrate on the individual. It seemed to be a vogue of the time that sociology could be studied without much regard to the

1 For summaries of some examples see Appendix 1.

individual. As a consequence, this stage was not given the attention it deserved in the study. When the study was later used as a base for further, wider work and study, the originally observed sociological phenomena yielded more understanding, especially by using the emerging A-I concepts.

Analysis of the problem

An early observation that emerged in the study was that all the companies were weakest in the analysis of the problem stage. They tended to skimp what Wallas (1926; see Figure 6) would call an incubation stage, between perceiving the problem and settling on a solution. The pattern became a special interest in reanalysis of the early work because new thinking suggested that this might be a typical pattern of mankind in general, not just a fault of management or these managers. The clue may lie in the origins of the word 'problem' – it comes from the ancient Greek and means 'something that is cast before [one].' Imagine going down the road to the forum having something cast in front of you; you might step to one side, or step over it, but anyway, just deal with it as quickly and as easily as possible. This is what we tend to do with problems; deal with them as neatly and swiftly as possible, hence the wisdom in the adage: do not make a mountain out of a molehill! However, the philosophers Quine and Ullian (1970) opine that, in order to understand anything in the universe, one has to understand the whole of the universe. Of course, this is impossible and any attempt to wait for such mass of information would paralyse action. Judgements are made on the nature of problems to be solved. Extra effort and time is given to the sort of problem that experience warns is the more dangerous and difficult; treating most problems as simply as we can is an intuitive economy of effort. This works very well most of the time, although memorable penalties can be paid when these judgements underestimate critical problems. In this respect, the managers in this study were no different from the rest of mankind, past or present! This stage ends with a proposed solution, however it is obtained.

Analysis of the solution

Although the analyses of problems were often treated casually, this was not true for the analyses of solutions. This stage was where all the companies and all the people involved expended a great deal of effort, often associated with a rise in anxiety. It seemed that the managers, in putting forward a solution, rightly felt that they were putting forward a part of their own reputation. Implementing an agreed solution means engaging others – their time, effort, and resources – in the (our) solution. If a solution we champion goes wrong, do we not fear that people will say: 'Who thought of this, then? Who pushed it?' The analysis of the solution was the bit on which everyone worked hard.

Very often, when a solution is thrown up it throws up a side-problem with it. To take one of the examples in the original study, the directors of a company concluded that a solution to a particular problem was to diversify their product base. They selected a new product that was very different from their present lines but which, if adopted, would solve the problem of an underused sales force at a certain time of the year. They were offered a windfall buy-out of another company and additionally thought there was useful overlapping expertise in its production. When being

interviewed in this example of management initiative, the managers talked almost exclusively about their *current* competitors. They knew a good deal about them, including what their main problems were, who their key managers were, and how much it cost them to do this and that. But in the case of the new product, these same managers did not even seem to be sure who their new competitors were. With their eyes still fixed on solving the original problem, the possibility of the solution throwing up a spin-off problem was not something they had thought much about. In other words, concentrating on the analysis of the (new) solution to the (original) problem, they seemed to deal lightly with the analysis of the (spin-off) problem their new solution had just made for them. So this new problem was also treated in the same way as the original problem – as lightly as possible. It was only when outcomes began to become all too apparent, e.g., the new competitors reacted sharply and effectively, that they had to go back to planning and treat them as a serious problem. Only then did the analysis of how to deal with the spin-off problems become a collective issue.

Criticising managers for failing to see all the spin-off problems thrown up by their main thinking is easier than avoiding these oneself – Quine and Ullian's (1970) 'cannot know it all' notion applies again, for one cannot pause to consider every possible effect. However, the criticism is that a search for the more likely of the more dangerous side outcomes was not usually undertaken as a standard procedure. This research showed that it was individuals who usually did such thinking, independently and ad hoc, without it being a specific part of group planning.

Agreement for change

Some people are autocrats who tend to make their decisions quite unilaterally. But most managers, even the most powerful, work more collaboratively. It is rare, in most organisations, to find people in a position of making big, critical decisions without consulting others; outwardly, at least, most want, or have to get, agreement for change. Even strong Managing Directors like to carry their board along with them. Others, less senior, have no option but to seek authority.

One observation made at this stage of the process was that it could take a long time to get agreement for change from a group. Sometimes it took a very long time, and yet many of those who had been involved had not seemed to remember this. When managers were asked some such question as: 'Why do you think it took 3 years to get this decision?' a frequent response was: 'Three years! Really! As much as that?' One story told was of a soap product that floated in water. Apparently the standard myth is that some top R&D experts cooked up a promising formula. They switched on a high-powered mixer and then went off early for a really good and splendid business lunch, coming back very late and somewhat hazy. In place of the mixture still whizzing about, there floated the now famous soap. They cut off a piece and (still with a headache) gave it to the Chairman next morning; it was at once a great success. The real facts turned out to be much less dramatic or amusing. The chemists concerned had worked out how to get a very white soap that floated on water. They had thought these two features a great idea, and set out to produce them. Once they had a suitable sample, they took it to the board (they were both very senior), which turned it down. It then remained around for quite a while, until somebody remembered it again and thought: 'Ah! We'll try this,' but it got turned down, again and again. It was accepted for a major market trial several years after the chemists had first thought of it. This

was at the time when more than one main line product suffered from falling sales and some radically new one seemed to be needed at once. This old, radical (an interesting combination of adjectives) product was remembered and at this point the idea broke through. The fate of other products had changed the climate and acted as the conditions for a precipitating event. Two lessons learnt here are that not only can agreement for change sometimes take a very long time, but it may still require unusual conditions (memorable precipitating events[2]) to get it, even among groups that pride themselves on their willingness to change. Yet other changes, somtimes just as large and expensive (e.g., major extensions to existing plant), can slide through easily; sometimes too easily for their own good.

Another repeated observation made was that those who gave agreement and those who received it had different impressions of how much agreement had actually been given. It seemed that the more successful the idea was turning out to be, the smaller the gap between these two views. Conversely, if snags had appeared, the bigger the gap began to appear. When a plan got into trouble, the givers of authority were prone to say: 'Well, I never gave you authority to go that far.' However, if the project appeared to be succeeding, they said something more like: 'You were given all the authority you needed.' Somehow, in the memory of those giving agreement for change, how much they had given tended to open and shut like a concertina depending on prevailing circumstance.

Acceptance for change

Another observation, relating to the agreement for change stage in the process of management initiative, was that organisations tend to keep potential change information confidential or even secret. While a group is trying to make up their minds, they try to prevent other people outside the 'magic circle' from knowing what is going on. They feel that in this way they can exercise some control over time (others cannot forestall them, say). They also believe that they can switch off all leaks of information. Unfortunately, not only did leakage occur but also the information that did leak was distorted. Whilst many people knew something about what was being discussed, often rumour added up to a picture that was both incomplete and incorrect. Yet, these were the people who, if the idea was to be implemented, were vital to be won over as part of the next stage in this management initiative process, that of acceptance for change.

Once agreement for change was obtained, the initiators were set for implementation and for this they needed the full collaboration of many others; subordinates and even peers and superiors who were not originally involved or part of the decision-making stage that had just passed. Some or even most of those about to take part had yet to be won over and be formed into an operating team. Although it could have taken a year or two to get agreement for a change, once it was given the timescale almost invariably altered drastically; the prevailing climate becoming: 'We don't want it perfect, we need it Wednesday.' The champions of the proposed change, having got the agreement they had sought, perhaps after frustrating months of argument as to whether to go ahead or not, now expected *immediate* acceptance for the change from others who were now concerned, so that they could press on without further delay.

2 For more on precipitating events, see the last section in Appendix 1.

Those who were being asked for their immediate acceptance for change often had, as has already been observed, inadequate information plus some misinformation as a start. They were expected to take in and consent to a plan it had taken others so much longer to accept, on so much more information, all checked out in searching discussion. However, when the initiators did not get immediate acceptance for change, they turned impatient and often fell back on another term, called 'resistance to change', with which to label anyone slow to agree. In practice, this term seems based on the notion that there are just a few people in any company (of which the informant is always one) on whom all its members are entirely dependant to bring about 'change'. Once these few have made up their minds, anyone who does not agree is classified into that large but inferior group of colleagues who are 'resistant to change'. It seems so unlikely that mankind has progressed in a mere few thousand years from caves to offices packed with technology (spectacular caves, indeed!), with no more than just a few per cent of the population promoting beneficial change, dragging all the others along by their hair. It may be the methods of the 'change agents' that help create their resistors of change. Adaption-Innovation theory is more precise: There are no people who like all changes, and there are no people who like no change. Everyone likes some changes but the question is, which changes? Consider this scenario: Suppose you have just been asked for your support for a (usually complex) change, which may well concern you greatly:

- in a flash you see that you like it;
- you don't know enough about it so you hold off the proposer while you ponder;
- you have thought about it and conclude that it doesn't suit you.

In two of these three cases, you are classified as 'resistant to change', but in reality you are, in those instances, not accepting the particular suggested change. The difference between the general statement, leaving you classified as against all change, and the particular, that you are against *this* suggestion, you will feel is highly significant.

The notion that can be safely advanced here is that mankind is indeed *Homo sapiens*, and selects with deliberate care which change to accept and which to reject, calculating this problem like any other. The users of the term 'resisters to change' may themselves have spent a long time arriving at a decision (constantly modifying it as more is learnt) but then expect others to accept it simply because it has (now) been accepted by them. It is easy to overlook that others have similar brains with similar needs for information and the time to cogitate. Every critical response should not be classed as resistance to change in general rather than resistance to this (or some part of this) change. This is another example of the human tendency to denigrate others with whom they disagree: 'You are different from me, most probably because you cannot be like me, and therefore you are inferior.' We must consider whether we might not be more accurate if we said: 'I haven't given you enough information and enough time to absorb the idea,' or perhaps: 'This idea may be good for the company but it may not be good for you.' Of course, in theory people say: 'We must bring everybody into the decision-making process; we must make sure they understand what it's all about,' but deep down there is another tendency to classify people into an in-group or an out-group. The assumption is that the in-group is select and knows best about this problem. The in-group may be the people who lead and the out-groups

are the people who are led, or whatever it is that distinguishes 'them' from 'us'. We are all, at times, the 'we' and at other times the 'them'. Forming in-groups is a characteristic of mankind and the basis of it is called discrimination. We discriminate, on selected cues, between those who are in the in-group and those who are not. It follows, if we are to find comfort and security in the chosen herd, that we deem it better than another herd, that we will fight to preserve our herd against any other, in mutual self-interest. In evolution this outcome of discrimination is a protective device, built into every herd animal so each individual can tell who is in the herd and who is outside it – friend or foe, hunter or hunted, interesting or uninteresting.

Discrimination has become a pejorative term but it is not the process of discrimination that causes problems; it is its use or misuse. For instance, a quite acceptable term in the realm of discrimination is loyalty to our family, company, department, or any other group to which we may belong. All of these structures are vital to us but adherence has its dangers, just as having and adhering to any other form of classification does. Every structure that is enabling is always, at the same time, limiting. This paradox must be resolved to best mutual advantage in society. We need group identity, collaboration, and cohesion from diverse people to get success from a group. But this often requires rapid flexibility in confronting a wide range of problems that the group will need to solve. The management of change and diversity is at the core of A-I theory. The very way in which the problem is perceived, as well as the way that it is tackled, places the problem solver in an in-group or an out-group. Yet the problem solver must manage well in each position and help others to do the same if the group is to be effective.

Implementation

The last stage, unless we envisage a spiral in which an end is the start of the process anew, is that of implementation. Once here, we appear to have progessed through this schema in a neat, simple, straight line, albeit, in places, with some difficulty. Of course, as with all dynamic schemata depicting processes, if things don't go well at any stage then every succeeding stage, and especially the final stage of implementation, will not go well. With all the problems that we have at every stage, it's amazing that we manage to implement anything. Fortunately, mankind is very clever and, despite all the problems, manages to implement a great deal. Nevertheless, few complex problems go though the stages without looping back and digression, pauses for related subprocesses to catch up, rethinks as a result of experience with new data, and feedback at every stage. The movement through this cognitive process is to be envisaged more like a plate of spaghetti than a straight line of uncomplicated progression. One important persistent weakness shown in this stage of the process of most of the cases examined in this management initiative study was that there was little overall analysis in retrospect. Unexpected success was gratefully received but rarely dissected so that, in understanding it better, more useful knowledge could be learnt; this and other similar observations are made by Drucker (1985). Some failures were also written off as 'bad luck' or 'inevitable in retrospect' and little was learnt from these either. This latter observation is picked up again later as this research is itself re-examined to see what else could be learnt from the more puzzling aspects that were not at first understood.

Summary

The study involved first, collecting information on the process of management initiative from all the key people concerned, in over 30 very detailed examples of corporate initiative deemed significant to the senior management in a number of companies. Second, analysing these data to uncover the 'ideal' pattern of steps or stages through which the process went. By 'ideal' is meant the most simplified pattern, ignoring error, day-to-day confusions and uncertainties, changes of mind, and all the other human affairs and failings that would have prevented an 'ideal execution'. This is presented as a schema, which helps us get a better understanding of the way in which individual minds, alone or in concert, solve problems. The number of stages selected to represent the progress implicit in this dynamic process, the boundaries that divide them, and their titles are the subjective choice of their author. This caution is needed, as any problem-solving process is continuous, so the stages are abstractions designed to help understanding. The whole idealised, dynamic (progressive) schema, which an author thinks adequately represents a mental process made manifest by the actions of a person or group, is to be used only if it seems to be accurate and useful to its user.

All the elements or stages in the management initiative process are themselves a process (or subprocess). All the numerous other elements, in their full or partial form or in their positive or negative form, are later embedded in A-I theory. Some key examples of these are examined below.

- The problems in obtaining agreement and authorisation for the proposed change; the problems of getting acceptance for the change as agreed and authorised.
- The failure to anticipate impending precipitating events, despite the fact that some people, but not always the same people, perceived each one. This suggests we all have 'blind spots' which we tend to overlook whilst readily seeing those of others.
- The problems of the proposed change that goes through too easily (and uncritically) for its own good; the problem that looks familiar and readily understood, but isn't.
- The problems that arise from the solution of another problem that is treated too casually.
- The curious unwillingness not only to analyse past (generally unexpected) successes but even many failures that cost dear. In general, a reluctance to treat as a problem an observation that what happened in a significant event and what was intended to happen did not coincide.

Many of the implications of the lessons from this study emerged from an analysis of the problems that seemed left over and unresolved at the study's formal end. This was done in the years that followed the completion of the original study, and what was learnt from these analyses (and added data from further work) also throws more light on the individual problem solver. The lessons are outlined below as the residual puzzles of the study. These were the stimulus for the work on A-I theory and helped in its formation. They also helped in ensuring that the emerging principles of theory remained close to practice. At the end of the analysis of the residual puzzles for which there seemed to be additional answers, there is a summary that will link this study to A-I theory.

ITS RESIDUAL PROBLEMS

The Management Initiative study, plus later experience and further study, threw up key problems (see Box 2). Understanding more about the study's residual problems helped form A-I theory, in and outside the realm of management.

Box 2 Key residual problems

Timescale of Acceptance	– Why do some take so long?
Objections to a Change	– Why is there sometimes a veritable barrage, often including mutually exclusive elements?
Precipitating Events	– Why do some come as bombshells?
Unwillingness to Analyse Past Events	– Who does, who does not?
Status of the Originator	– Can this be a clue?
Types of Change Proposed	– Can this be an answer?

Timescale of acceptance

This was related to the variation in the time taken by individuals and groups both to accept a problem perceived by another and to accept the solutions. These timescales ranged from their being accepted 'on the nod' – to use an English expression meaning 'accepted virtually without debate' – to prolonged and sometimes acrimonious debate lasting months and even years. On occasion, the initiator of the idea was surprised by the ease of its acceptance. It was as if they wanted their pet idea to be thoroughly tested before it became wholeheartedly accepted. On other occasions, some matter involving the expenditure of comparatively little resource ran into real and serious opposition. Of course, obvious factors were playing a part, such as the size and cost of a venture, the number of plausible alternatives available or when most agreed that too little information was available to be able to make a choice, to say nothing of the intrusion of company 'politics'. These and other obvious vectors, however, did not seem to account for all the principal variance. There still seemed to be a missing factor that was playing a significant role in at least some of the decisions being made.

In the early research, it had appeared that the 'on the nod' events and the protracted events were distributed almost bimodally. It turned out, on reflection, that this was an outcome of the way the examples had been selected for study. These had been the ones found by the manager interviewed as interesting or significant, etc., so the selection was certainly not random. Further studies showed these timescales of acceptance to be more normally distributed. As expected, there were a number of examples, especially those occurring in times of crisis, or when different departments lined up as rival protagonists, that were more likely to have a long and difficult passage. However, this reappraisal did not account for all the examples lying on the extremes of this time-lag continuum. It seemed as if a variable was missing, which if known and taken

into account would help in understanding why some proposals took such an age to be accepted whilst others, just as large, expensive and complicated, went through much more easily. In Box 2, there is first an outline of all the residual problems in this cluster that later were given a general explanation. Second, there follows an explanation of what seems to be the missing variable. Third, a brief review of the problems is given, using the probable missing variable to make more sense of the observations.

The timescale of acceptance was one residual puzzle; another was related to behaviour that everyone recognises only too well from their personal experience: The array of objections that are put up by people who do not want to accept the idea, but do not appear to have a clear, brief, cogent case. The objectors appear to the proposer not to be sure why, or will not say why, they object, for the objections stated are not only many but often weak and mutually contradictory. Many managers have a list hung up in their office of the 6 best ways of killing off an idea, the 13 best ways of putting someone off, or other such grim wit. The list in Box 3 was recorded during one interview with one manager on a single issue. It includes exclusive statements and looks very much like defensive behaviour. It seems now, as at the time, that this manager might have said almost anything in order to stop an idea going through. But why did this happen? How could some managers, intelligent and experienced people, as was this manager, on occasion be so stupid as to be unable to see that they are saying things that are incompatible? This was a finding for which there was no good understanding at the time, except for an inclination to treat with caution such hypotheses as stupidity, resistance to change, or bloody-mindedness, all of which explanations were routinely advanced by other managers whenever this reaction was encountered in other people. This is a problem that needs to be further explored in the search for plausible explanations.

Box 3 The seemingly illogical objection barrage

Do Not Need It
There Is No Problem
We Have No Resources
Too Difficult to Do
No Sale for It
There Are Other Priorities
It's Been Tried and Failed
It's Being Done Now
It's Not Suitable Here
We're Doing Well, Why Risk?

Precipitating event

The third of the residual puzzles is a notion founded on that core element of learning theory: the precipitating event. For nearly a century psychologists have used the concept of stimulus–response as a very basic learning mechanism. If, for any response

to happen, there has to be a stimulus (or stimuli), was the precipitating event, sometimes dramatically observed in this study, simply a special subset of this start to a cognitive process?

In many of the examples studied, the continued progress of an initiative depended on a precipitating event that acted as a veritable bombshell. They were characterised as appearing as sudden surprises, their resolution needing to be achieved quickly and their nature threatening; in short, their revealed existence was associated with crises. Yet, on every occasion that this happened, there was someone in the company who had foreseen the event, but those taken aback by its appearance had ignored the warnings. It was a puzzle as to why groups of high-level people could be taken so much by surprise from time to time, even when at least one of them had already predicted and warned of the impending danger. The usual explanations given, such as stupidity, short-sightedness, inexperience, or complacency, although occasionally valid as contributing factors, were not adequate to understand many of these phenomena. One reason for this is that these same able people were found, at the same time, to be aware of other (potential) precipitating events and be anticipating them in their decision making. The difference seemed to be that these other precipitating events appeared as triggers for action within such constructs as 'forward planning' or 'contingency planning'. So some stimuli for action were foreseen and built, relatively safely, into projected action and some, often despite warnings, sneaked up and created havoc. Although various obvious factors were always present, some additional explanation seemed missing. It was also puzzling that few of the outstanding successes or failures were subjected to subsequent detailed analyses for the purpose of revealing and understanding any underlying general management principles.

Status of the originator

Further study after the successful publication and reception of the Management Initiative study concentrated on the problems it threw up, particularly those relating to the individual problem solver. At first, looking back through the original notes before embarking on the collection of new material, it seemed possible that one could crudely divide people into two groups: those who were in what we might call the Establishment (the inner-group, the inner-core), and those who were on its periphery or in outgroups. The 'establishment group' is an imprecise notion of a power in-group, often located within another wider in-group, that typifies more than any other subgroup the wider group's climate, core of beliefs, rationale, and raison d'être. The members of this inner core are not wholly identifiable as similar in rank or have any other obvious feature that is always present, other than membership of the wider group. However, they do seem to agree on some underlying principles of their problem solving in that they appear as the interpreters and arbiters on matters of the culture and climate of the wider group. The group's culture and climate forms a shared cognitive structure relating to the group's reason for being and its overall aims and approved methods of operating (problem solving). Its members, therefore, readily and almost intuitively share the group's notions of key cognitive boundaries and their general content, which are the ones that are dominant in the (wider) group. Within this climate, any idea that emerged from the (establishment) core was much more likely to be accepted quickly – sometimes too quickly for the long-term prospects of its own success. If it came from outside this group, even from its peripheral (nonestablishment) members, often

irrespective of seniority, it was more likely to be perceived as suspect. Consideration of the importance of these observations and interrelated terms will lead us on later to consider the work of Kelly (1955), Kuhn (1970), and Berger & Luckmann (1967) as support for the A-I theory's assumptions on the notion of structure.

There were some curious tales associated with this residual puzzle that were related by managers in the Management Initiative project. One of these related to the fate of some initiators. There were cases quoted in which the people who put up ideas got them readily accepted and then got promoted, even if the ideas failed. The reason, leaving aside phenomenal luck or capacity for intrigue, was that: 'In this Company we do not penalise risk,' or: 'Well, he learned so much by this mistake, we don't want to lose him,' or even more simply: 'In this Company we do not witch-hunt.'

But this strategy was certainly not universally applied. There were other cases that had occurred in the same company, involving a nonestablishment person, who got an idea through 'the system' with the usual difficulty but which turned out to be spectacularly successful. However, managers often reported that the very next idea from the same person was still suspect! Nor was that all, for another puzzling observation was that should the latter person fail, he (all these managers involved happened to be males) was much more likely to leave the company, taking with him the entire blame for the failed project. In short, the person becomes a 'scapegoat'. What were the differences between these so very different circumstances and people, often located in the same company and treated so differently by the same people? Thinking about the next puzzle helped.

Type of change proposed

Finally came a breakthrough notion in the follow-up research to the original study. It concerned the differing nature of ideas that featured in the examples used to build the schema of the process of Management Initiative. It was that they ranged between the paradigm-consistent ideas to the paradigm-cracking ones (Box 4), and it became clear that the fate of the initiative and that of their originators (and their opponents) differed in a rational pattern. Going back over the array of residual puzzles, one can see what these new thoughts can help reveal. If an idea that has been perceived and advanced is paradigm consistent, it means, by definition, that it presents face validity to the establishment as it is in accord with the prevailing climate.

Paradigms[3] are consensually held (most critically by the relevant establishment) and collectively understood, since they are the set of beliefs of how all key matters work and relate to each other; they are in place because of their power and problem-solving

Box 4 Type of change

Paradigm Consistent
Paradigm Cracking

3 A term meaning a super cognitive guiding structure – wider, e.g., than theory or rule. Made popular by the work of Kuhn.

guidelines. An idea that emerges from the paradigm is going to be much better understood by, and more acceptable to, those who are a part of its consensus.

The time it takes to accept that a particular problem exists or that a particular solution is both appropriate and viable will depend, in the first instance, on how well it is understood in the context of the circumstances within which it is advanced. An idea that can be shown as 'paradigm consistent[4]' is more likely to be expected to work. In contrast, it is a much greater task having to explain and 'sell' what amounts to a package of change: (a) a new paradigm (or a significant change to an accepted one), (b) changes to the view of the old problem in the new light of the changed paradigm, and (c) the suggested solution as relevant and viable. The idea within the paradigm is so obviously simpler to sell and, later, to implement confidently and safely. The proposal that challenges the paradigm has more 'unknown' elements, making its assessment, in terms of its likely success and the extent of the possible penalty, a much more difficult and hazardous operation. This may be why even the more modest proposals that were seen to be on the periphery of the paradigm often took months to win acceptance. Conversely some quite major and costly proposals, visibly quite in accord with the prevailing paradigm and therefore quite expected and with their underlying principles understood, got through more easily. Indeed, some got through so easily that they came to grief for lack of sufficient analysis of some critical aspect. It also became clear that the more innovative managers were more likely to analyse an innovative past event than the adaptors were (who might have been quite relieved to see the back of it). But the more adaptive learned more from events that were adaptive in nature – whether they succeeded or whether they failed – whereas the more innovative had long since been bored by these proposals.

A-I theory contends that *Homo sapiens* is no way resistant to change in general: Indeed, no species can afford to be; the fossil record beckons the persistent failure! Humans, lacking instinct to guide them, are most discriminating in what changes to accept or reject. Where the proposal, idea, or plan can readily be fitted into consensually agreed, expected structure, it can be assessed more quickly and more certainly than if this is not the case. Not only acceptance but also rejection may not take long, since it can be both probed and defended more coolly, more rationally, and with more consensually agreed knowledge and experience. The reverse is true if the very structure (paradigm, context, theory, policy) has yet to be located, grasped, and evaluated. Hence, whilst playing for time, the defensive barrage of objections noted in Box 3 is liable to be thrown up. Not a case of a stupid person or one pathologically fearful of novelty, but a member of *Homo sapiens*, being sapient enough to try to win time to finish calculating whether the proposal is a pay-off or not! Of course, when the calculation is over the result may still be rejection. For the ordinary person this does not represent a generalised resistance to change, just a calculated rejection of a particular change. The fact that people differ in the outcomes of their calculation is no excuse for them, as a matter of course, to be rude about another's considered conclusions.

4 Meaning consensually agreed understanding by a large group of the nature of their operations, their aims, and the appropriate methods of achieving them. The equivalent, for a large group, of the cognitive structures of attitudes, beliefs, and experience needed by individuals to provide an understanding of perceived reality.

ITS CONCLUSIONS

The main conclusion from Management Initiative (Box 1) and the following experience is that analysis of its process helps understand, and even helps predict, the fate of ideas in an organisation. To summarise: When any idea, at any point within the process, put forward by anyone, is outside the prevailing paradigm, an additional problem for the recipients arises. Before they can evaluate the idea (perception, solution) they need to be able to understand and accept the perceived substantial change of structure implied in the shift from the prevailing mode. This constitutes increased processing of a wider or otherwise altered cognitive domain, possibly involving elements hitherto seen as irrelevant. Crossing over into this altered domain involves a reappraisal of knowledge that has hitherto been regarded as securely known, involving an unfamiliar perspective of the problem. These new perspectives may also throw up possible solutions about which little is known and, with them, the attendant risks of not-previously-considered alternative courses of action. The more unfamiliar the variables now appear, the greater seems the risk; so the needful reappraisal takes more time, with all the implications that has for the manager making the proposal. Conversely, if the problem is understood within the paradigm, less information needs to be processed and the attendant risks are better understood. The stimulus for moving forward such a paradigm-consistent proposal hardly needs a dramatic 'precipitating event', more a trigger within an existing forward plan. It is true that *any* change within a paradigm will necessarily modify the enveloping and guiding cognitive structure, but in adaptive mode this will happen as an outcome of its improvement rather than threatening its replacement. There seems more obvious risk in altering the paradigm first, in order to find a solution. Note that the paradigm held by the group can be orientated towards either adaption or innovation, making it just as difficult for innovators to see proposed adaptive change as worthy as it is for adaptors to evaluate favourably the more innovatively orientated notions.

This more complex relationship between cognitive style and change brings into question the oft-repeated supposition that large organisations crush initiative, innovation, or even all change. In the first place the historical evidence is against this notion. The largest, most global organisations – particularly of government and business – have grown up this last century, the very period that has seen the greatest advances mankind has ever achieved. What has been overlooked is that adaptive change can be both creative and far-reaching yet remain within generally accepted structures, getting relatively ready acceptance and support; whilst innovative change, *by its nature*, is more difficult to implement successfully anywhere, at any time.

The management implication of these conclusions is that members of a management team may disagree strongly on the kind of solution needed, but may fail to see that their differing perception of the problem itself may be the cause of the difficulty. Even if this is seen, there is no guarantee that all members of the team will avoid the intuitive feeling that some of their colleagues must be fundamentally (even stupidly) wrong in their approach. Crudely dichotomising these complexities, one group appears to the other as being over reliant, yet again, on 'the way we do things' in finding the answers; that, at least on this occasion, there may be greater risk in reworking the paradigm than in revising it. The other group is quite sure that a radical revision of 'the way we do things' is necessary this time and the risk of doing it is, therefore, worth taking. This kind of disagreement can be difficult enough to resolve, but there

is an added complication. It is hard, in such a situation, not to suppose that the other person's views are flawed because of a capacity or moral deficiency (lack of knowledge and experience, courage or prudence) or, worse, an outcome of sheer perversity. Subsequent work and research suggests, for instance, that teams of homogeneous cognitive style have closely held and shared cognitive structure. It is easier to recruit new members who 'fit' (both parties find each other congenial and easy to evaluate). Such teams cohere and collaborate easily, are easier to manage (its members understand or trust what's going on) and are likely to be more successful along a narrower front than heterogeneous groups. Heterogeneous (style) groups[5], in sharp contrast, are more difficult to recruit and form into a cohesive team and are more difficult to manage, because of communication problems, but are more efficient, over a wider range of problems, than homogeneous teams. The pay-off point is hard to calculate.

The difficulty of managing heterogeneous teams has some interesting spin-offs, some of which were detected both during the collection of these case histories (see Appendix 1) and their subsequent analyses. One of these, mentioned earlier, is the general unwillingness to analyse the past so as to squeeze out more learning that can be applied in the future. Managers seemed then, and continue to seem now, obsessed with 'getting things done', personally supervising the ongoing process that could just as readily be undertaken as (or more) competently by more junior staff. To be caught undertaking deep, long-term thinking about the very process they are managing seemed to be an unwarranted indulgence. Of course they did do this from time to time, but almost as an optional extra. Often they chose to go on some training course in the search for solutions or even, occasionally, to seek better definitions of vaguely perceived problems. The indulgence factor entered yet again. The courses frequently chosen were those deemed to be billed as training (immediately practical) rather than theoretical (underlying understanding); as short as possible (so as not to lose time 'doing'); user friendly (not too intellectually demanding, permitting some course members to bring outstanding work with them to finish on the course); and using 'hands-on' methods (small input, gradually presented with spoon-fed integration and frequent, undemanding practice sessions, i.e., no 'heavy' lectures). The suspicion is that managers feared to be seen stockpiling information that might cause fissures in a fragile team. The avoidance of analysing some past failures and nearly all successes, even when these were unexpected, seemed in part to rest on the same need to be seen as safely doing and not digging up potentially divisive analyses[6]. What seemed missing was an understanding of the management of heterogeneous teams (having understanding and respect for differences) wherein argument is seen as a promising route to sound progress rather than conflict. Such understanding of the management of diversity might have helped release a team's members from an intellectual straitjacket of the prevailing mode – adaptive or innovative – brought about by a fear of being seen to create dissent.

The intention of reviewing those intriguing residual puzzles was to show how their review (together with additional information) helped lay some foundations of A-I theory. Also that there is no state that is either ideal or permanent – changes are

5 Possibly all heterogeneous groups, whatever the nature of the differences, and not just style.

6 Serendipity is often taken as a rightful reward from Fortune to the successful manager – examining it might seem to be rudely inspecting the teeth of a gift horse.

constantly needed to get a good balance for the moment. A group possessing too little shared structure is inefficient in an adaptive sense and so will find it increasingly difficult to maintain and improve the vital existing operations. Every organisation needs a strong element of adaption for its continued existence; how much depends on the nature of its main problems. Too much structure and adaptive efficiency boomerangs; although continuing to become more efficient, it can be trapped within an inappropriate paradigm or one in dire need of reform. In such cases, it is time for the innovator to come to the rescue, for the innovator is more inclined to solve problems as much despite rules as by their use – an inconvenience when the paradigm seems to rule supremely well. A difficulty in getting an agreed view on the needs of the situation is the definition of the term 'success' in relation to an aim or goal. The term always has some subjective component for each individual concerned because it is itself contingent on the evaluation of many variables. To problem solve successfully, whatever that may mean in any particular situation, we need to view problems and conceive solutions in terms of what is needed – another subjective operation. Most times we need to understand how each person in our problem-solving team works, so as to get the best out of everyone as the nature of each problem changes. This is the essential problem of the heterogeneous team. The aim of the problem-solving leader *and* each team member is to make use of the available pool within the team of individual differences, including thinking style, which can be made useful. Below is a summary of the findings from Management Initiative:

- Analysis of the problem is the stage most likely to be skimped. Often, the assumption is that the problem is better understood than it is and that past solutions will still work. This is not all bad; constantly making more of a problem than is needed will cripple progress. Knowledge, insight, and experience are expected to indicate the level of difficulty of a problem and the value of getting an early, acceptable solution. However, the danger is in underestimating the problem, and those best placed to do so (often those doing the job) need positive encouragement to raise the alarm.
- Analysis of the problem is likely to overlook the spin-off problem that is generated by the solution of the original problem, because the spin-off problem is treated as lightly (when we can) as any other problem.
- The more the accepted consensus of current practice (the paradigm) is challenged, so getting agreement (authority) for a change will be harder. A proposed change of paradigm has to be 'sold' before seeking agreement for the suggested solution. Being seen to understand this helps set up more trust and better rational discussion.
- Getting acceptance of the change from those who have to implement it, once it is agreed, takes time – if such implementation requires enthusiastic and intelligent action (delegation). In any complex task, people of different preferred style, level, experience, and position are often needed. If their diversity is to be well deployed they need to be won over and to work effectively together. Setting this up takes time, effort, and other resources; the pay-off is success. This is hard to do in crises; management's job is to anticipate crises.
- Implementation will get into difficulty if any part of the foregoing process is not adequately carried out. (Any stage that goes wrong will affect every following stage.)

This introduction has covered a summary of content followed by a synopsis of the study in problem solving in management that was a formative influence in developing a theory of cognitive style. A misunderstanding of others' different style, often mistaken for inferior level, played a significant part in the difficulties met in groups solving problems. The Management Initiative study, as a part of the introduction, also helps underline that the theory in this book initially derived from practice and, it is hoped, will not throughout deviate far from practical use. The next chapter takes up the problem of unravelling style but now sets it into the context of problem solving in general. It consists of an exploration, in personal management terms, of how the individual problem solves and where style plays its part among the many other elements. This next chapter completes the general foundations of this work; after that the chapters generally move from personal problem solving to solving problems in groups and so collective management of diversity within oneself, of the problems to be solved and of other involved problem solvers.

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