



Health & Safety at Work : All practicable steps and the current state of knowledge

WEB Research

with the support the

New Zealand Law Foundation

September 2000

Centre for Research on Work, Education and Business Limited

Phone: +64-04-499 8140, Fax: +64-04-499 8395,

Email: phillip.capper@webresearch.co.nz ken.wilson@webresearch.co.nz

Level 9, Commercial Union House, 142 Featherston Street,
PO Box 2855, Wellington, New Zealand



Foreword

Health & Safety at Work : All practicable steps and the current state of knowledge.

This has been an ambitious project in its scope and goals. The project gathered key concepts, which make up the current state of knowledge about human error, considered the role and practices of the law, especially around personal injury by accident, and finally explored how common sense understandings of the way the world works, especially understandings about human behaviour and how to influence it, can be impediments to the successful promotion of health and safety in the workplace.

Our goals have been to:

- make some important and complex fields of knowledge more accessible to the public;
- provide the practising lawyer with access to the state of current knowledge about the factors influencing the creation of safe systems of work; and to
- demonstrate that some of the fundamental principles that underpin current legislation and legal practices around safety, negligence and compensation need to be repealed and altered in the light of the state of current knowledge about human error and the promotion of safety.

We owe the New Zealand Law Foundation our sincere appreciation for their interest and support. As students of human nature in the workplace we rarely have the opportunity to draw the attention of the public to new thinking on a matter as important as safety at work; the grant we received from the Foundation made this possible.

We intend to maintain the currency of this project for some time and welcome comments and suggestions that will improve the resource. Please send comments to phillip.capper@webresearch.co.nz

A copy of this project may be found on the web site of the Auckland District Law Society (<http://adls.org.nz>) and our own website (<http://www.webresearch.co.nz>).

September 2000

Phillip Capper
Cec Crook
Ken Wilson

1. INTRODUCTION	1
1.1. What constitutes ‘knowledge’ of health and safety?	1
1.2. The main causes of health and safety problems.	1
1.3. The legislative and regulatory environment	2
1.3.1. Enforcement, penalties and sanctions	2
1.3.2. Other regulatory sanctions	3
1.3.3. Contradictions in the legislative and regulatory environment	3
1.4. Complicating factors	3
1.4.1. The problem of frequency	3
1.4.2. The problem of innovation	4
1.4.3. The problem of coping with the unexpected	4
1.5. Implications for legislators and the courts	4
1.6. Suggested approaches for the reader	5
2. ACCIDENTS, ORGANISATIONS AND THE LAW	6
2.1. Accidents at work	6
2.2. Contradictions between the operation of the law and the nature of the workplace	7
2.3. Influences on workplace behaviour and attitudes	8
2.4. Types of organisation	9
2.5. Distinguishing between types of organisation	10
3. PUBLIC PERCEPTION	11
3.1. The different types of knowledge	11
3.2. How perceptions vary	12
3.3. Judicial analysis of accident causation	12
3.4. The purposes of prosecution	13
3.5. What Is ‘Reasonable’ knowledge?	13
4. THE CURRENT STATE OF KNOWLEDGE	15
4.1. Types of accident.	15



4.2.	Causes of accidents	15
4.3.	Approaches to eliminating error	16
4.4.	The 1970's: Cockpit resource management .	17
4.5.	The 1980's: Crew resource management	17
4.6.	The 1990's: Corporate resource management	17
4.7.	Human Error – the James Reason model	18
4.8.	Activity theory	20
4.9.	Disturbances to systems	20
4.10.	Contradictions in systems	20
4.11.	Learning to eliminate error	21
4.12.	Types of human error	21
4.13.	Stability and instability	22
4.14.	Slips and lapses	23
4.15.	Rule-based mistakes	24
4.16.	Knowledge-based mistakes	25
4.17.	Violations	26
4.18.	Reducing error	26
4.19.	Organisational factors in unsafe actions	27
4.20.	Systems safety and responsibility	31
4.21.	Probability	32
4.22.	Multipliers	32
4.23.	Individual competence	33
4.24.	Bringing the factors together	33
4.25.	Management practices	34
5.	THE CURRENT STATE OF THE LAW	35
5.1.	Protection of the Person.	35
5.2.	Criminal Law and 'Corporate Manslaughter'.	36
5.3.	The Health and Safety in Employment Act 1992.	37



5.4.	‘All Practicable Steps’	37
5.5.	Hazards	38
5.6.	Management Responsibility	39
5.7.	Accident Compensation in New Zealand	40
5.8.	Summary: The Relationship Between the Law in New Zealand and the Current State of Knowledge.	44
6.	CURRENT LAW AND THE CURRENT STATE OF KNOWLEDGE	46
6.1.	Vertical Flight Management v Airwork NZ Ltd.	46
6.2.	Department of Labour v Buchanan’s Foundary Ltd.	46
6.3.	Department of Labour v De Spa Ltd	47
6.4.	Department of Labour v Independent Fisheries Ltd CRN 300902671	47
6.5.	Knowles v Griffins Foods Ltd. CRN 4055004540	48
6.6.	The Department of Labour v Andy Kay A.P. 326/96	48
6.7.	The Department of Labour v Central Cranes Ltd; AP 30/96	48
7.	LAW DATABASE AND LIBRARY SEARCH	49
7.1.	Law Database Summaries	49
7.2.	Other important case summaries.	78
7.3.	Law Commission Library materials	82
7.4.	Library Summary Hard Copies	86
7.4.1.	OSH Library	86
7.4.2.	ACC Library	86
7.5.	Other cases considered by WEB Research	87
8.	THE RESEARCH IN COGNITIVE SCIENCE	89
8.1.	‘Depth-Mind’ To Knowledge Base	89
8.2.	Reality	91
8.3.	Defining Reality along a Continuum	95
8.4.	Current Reality	96
8.5.	Values, Beliefs, Attitudes and Habits	97



8.6.	Self-Talk	99
8.7.	Self-Image, Visualising and Affirming	100
8.8.	Personal Affirmations	101
8.9.	Creativity and Creative Problem-Solving	102
8.10.	Psychological Drive and Energy	105
9.	THE RESEARCH IN ORGANISATIONAL SCIENCE, MANAGEMENT AND LEADERSHIP	108
9.1.	Cognitive Needs Assessment not Behavioural Task Analysis	109
9.2.	Management and Leadership: The Modern Context	111
9.3.	Management Practice Post World War 2 (WW2), and the Military Metaphor	112
9.4.	The Need for Leadership in an Era of Discontinuity	113
9.5.	Directions In Leadership Research	115
9.6.	Transactional and Contingency Theories of Leadership	115
9.7.	Transformational Leadership: The Leader-Manager And The Learning Organisation	116
9.8.	Managers as Empowering, Transformational Leaders	117
9.9.	Attributes of the Charismatic, Empowering Leader	120
9.10.	Can Transformational Leadership be Developed?	121
9.11.	Followers	123
9.12.	What is a Team?	124
9.13.	Interconnectedness of Real Teams for Organisational Learning	125
9.14.	Personal Competence and Organisational Effectiveness	125
9.15.	Organisational Effectiveness	126
9.16.	Goal-setting and Goal-tracking	127
9.17.	Motivation	127
9.18.	Imperial Level of Transactional Leadership	128
9.19.	Interpersonal Level of Transactional Leadership	128
9.20.	Institutional, or Transformational Leadership	129
9.21.	System Safety - A Critical Issue	129
9.22.	Contemporary Management is Complex	131



9.23.	Learning Organisations	131
9.24.	Meeting Customer Expectations	136
9.25.	Manager to Leader-Manager	138
9.26.	Situated Learning and the Development of Expertise	139
9.27.	Best Practice	140
9.28.	Leader-Managers as Systems Designers	141
9.28.1.	Leader-Managers as Teachers and Coaches	142
9.28.2.	Leader-Managers as Stewards	143
9.28.3.	Three Cornerstones of Learning Organisations	144
9.28.4.	The Emerging Need for 'Distributed Leadership' and Expertise	144
9.28.5.	The State of Play in New Zealand Management	146
9.29.	Appendix One. Qualities of Leadership.	147
9.29.1.	'The Trait Approach' (Adair, 1984, pp. 265-266)	147
9.29.2.	Nine 'Solid Contributions Of Leadership Research'	148
9.30.	Appendix Two. Managing For Total Quality in 'Loosely Coupled Networks & Alliances'	150
9.30.1.	Needs Assessment for Total Quality and Personal Accomplishment	151
9.31.	Appendix Three "Foundations Of Morale"	155
9.31.1.	Components Of Charisma For Transformational Leadership (Conger and Kanungo, 1987)	156
9.31.2.	Organisational Communication Flows (Sligo, 1988)	157
9.32.	Appendix Four. Information & Communication Through Dynamically Networked Organisations	158
9.33.	Appendix Five. Characteristics of Creative Leaders Knowles, 1980, 1983, 1990)	159
9.33.1.	Characteristics of 'Educative' Organisational Environments	160
9.33.2.	Characteristics of Creative Leaders	161
9.34.	Appendix Six. Differences Between marae Management And Pakeha Management (Tremaine, 1990)1	162
10.	GLOSSARY OF TERMS	164
10.1.	Accident	164
10.2.	Detail and Dynamic Complexity	164
10.3.	Human Error	164
10.4.	Human Factors	165
10.5.	Knowledge Base (Long Term Memory)	167
10.6.	Working Memory (Short Term Memory)	168

11. REFERENCES

Table of figures

Figure 1. The causal elements of an unsafe act.....	6
Figure 2. The tensions between prevention and punishment in dealing with accidents.....	8
Figure 3. The continuum of perception between direct personal and indirect systemic causes of accidents.....	11
Figure 4. Generic error modeling system.....	19
Figure 5. A typology of unsafe acts (Reason, 1990).....	22
Figure 6 Personal factors	28
Figure 7 Situational and task factors	29
Figure 8 Showing active and latent failure pathways	30
Figure 9 Relationship between management practices and safe performance.....	111
Figure 10 Transactional and transformational leadership	122
Figure 11 Arenas of personal and professional concern integrated for Best Practice.....	141

1. INTRODUCTION

This project had been written to provide resource material and assistance to lawyers and laypersons who may be required to *'take all practicable steps in relation to achieving any result in any circumstances'* pursuant to the requirements of the Health and Safety in Employment Act 1993, S.2. Such persons must consider the meaning of 'the current state of knowledge' about matters in the field of occupational health and safety. This project collates and discusses the current state of knowledge about avoiding harm, or more popularly, the project sets out what everyone should know about how to manage the risk of accidents and harm.

This introduction is an overview of the detailed material that follows in the body of the report.

1.1. What constitutes 'knowledge' of health and safety?

'Knowledge' concerns what is known. When considering 'the current state of knowledge' about health and safety and the causes of accidents there are at least five sets of knowledge of significance. They are those of:

- 'The person in the street' (who will often also be an employee, and - from time to time - a juror);
- Managers and others with formal responsibility for health and safety in organisations;
- Legislators and, by extension, the assumptions embodied in legislation
- Lawyers and judges;
- Academics and researchers working in fields relevant to health, safety and accidents.

These different sets of knowledge can lead to vastly different ways of understanding what caused a catastrophe or a critical incident. These differences are discussed in Section 3.

1.2. The main causes of health and safety problems.

The main challenge to those who design a legislative and regulatory environment to promote health and safety at work is the complexity of the issues involved. Unsafe or unhealthy environments, and critical incidents can be the result of:

- **error (that is – an inadvertent act);** or the result of
- **omission (that is – a failure to take a precaution which is known to reduce the likelihood of a critical incident or critical situation occurring);** or
- **violation (that is – a deliberate act which is unsafe).**

Errors, omissions and violations can occur because of:

- factors which are embedded in the **situation (which includes the nature of the organisational system in which the activity is taking place)** or;
- factors which are embedded in the nature, characteristics or attributes of the **person/s** who actually commit the unsafe act, and also their motivation for acting in particular ways.

However for any given critical incident or unhealthy situation all four variables might be found in its history. In many, if not most, cases the question is which of a number of relevant situational and personal factors can properly be said to have ‘caused’ the incident.

In the case of the prosecution for manslaughter of the captain of the Ansett New Zealand aircraft which crashed at Palmerston North, the deposition hearings heard submissions that the aircraft had a design fault, that it had been inadequately maintained, that at least one of the flightcrew had not been trained to conduct the procedure required, and that the captain made some errors of judgment.

Much of the legal argument concerns which of these factors can be said to have ‘caused’ the accident, and whether the captain’s errors were a consequence of his own failures and inadequacies or of the accumulated impact of the other factors, and whether he could reasonably have been expected to act differently even if the other factors are accepted as contributory factors.

1.3. The legislative and regulatory environment

The Health and Safety in Employment Act (1992) (HS&E) has at its objects:

- to promote excellence in health and safety management;
- require persons in places of work to perform specific duties to ensure that people are not harmed as a result of work activities;
- to provide for the making of regulations and codes of practice in respect of specific hazards.

1.3.1. Enforcement, penalties and sanctions

The Act also provides for enforcement through an inspectorate and through the provision of penalties for a failure to comply (Section 49), by:

- taking actions which are known to be harmful (that is, by committing a violation): or by
- failing to take an action knowing that thereby harm might result (that is by committing an act of omission);

Section 50 also provides for prosecution of people who fail to comply with the Act.

1.3.2. Other regulatory sanctions

In addition to risk under the HS&E Act, those at work and the organisations that employ them are also at risk from prosecution under criminal and civil law, and are also likely to face financial and other penalties under the Accident Compensation legislation.

1.3.3. Contradictions in the legislative and regulatory environment

The summary above shows that the intent of the legislative and regulatory environment is both to promote safe practices and to provide sanctions and recompense for those who fail to do so. There is a tacit assumption that the existence of penalties and enforcement are an effective means to promote improved workplace health and safety.

Unfortunately the experience of health and safety practitioners, together with the current state of knowledge revealed by research, contradicts that belief.

The reasons are complex and come from the behavioural and cognitive differences associated with the different reasons for health and safety problems – error, violation and omission.

The evidence is that mechanisms that are appropriate for the reduction of the frequency of error are not necessarily appropriate for helping to reduce the frequency of violations and omissions. In fact it can be worse – some interventions that effectively reduce error can have the perverse effect of increasing the motivation to commit violations once they are associated with sanctions. For example if we wish to learn from our mistakes we may want to encourage the no-fault reporting of errors and omissions so that we can learn how to improve practice, but when such reporting carries the risk of attracting sanctions a motive to conceal errors can be created.

Furthermore mechanisms that might serve to reduce the impact of situational factors are not necessarily appropriate for the reduction of the impact of personal factors. Again it can be worse – mechanisms aimed at reducing situational impact can have the perverse effect of placing an added burden on person/s, thereby increasing the impact of personal factors.

1.4. Complicating factors

1.4.1. The problem of frequency

These issues become more complex when we add in the factor of **frequency**. For any given task there is an irreducible minimum error rate. This is a function of the limitations of the human brain and human perceptual apparatus. If you know this rate (and it is only known experimentally in certain working environments – notably in power generation and aviation) then you can obtain a measure of how sub-optimal a given health and safety working environment is by the gap between the minimum possible and actual error rates. In the absence of scientifically measured rates, best

practice will do. For example the concerns about the accident rate at Tranz Rail were significantly based on the knowledge that the company had a poor record compared with other rail operations internationally.

But having an idea of how sub-optimal a given situation is does not tell us *why* it is sub-optimal.

Frequency is a particular problem in small and medium sized enterprises. At both the individual and organisational levels it is easier to adopt the principle that the gains outweigh risks in neglecting or violating good health and safety practice when the small size of the organization means that even where there is poor practice the critical incidents are widely spaced in time.

Entropy applies in any health and safety sensitive environment – big or small – meaning that the longer the time since the last critical incident the less attention is paid to health and safety. There is no way around this problem of human cognition that is economically viable for smaller firms. For example it is common for workers on construction sites to omit to use their safety harnesses when working in high places. Critical incidents typically occur once every 1700 risky movements. An actual accident eventuates about once for every 20 critical incidents – that is once every 34,000 violations. A large company will experience accidents or ‘near misses’ more often than a small company, simply because of the frequency of the violations. But it is after an accident or a near miss that attention to safety sharpens up for a while.

1.4.2. The problem of innovation

Violations are ambiguous acts. All innovation is a violation of existing practice. Things do not improve unless we change what we do. Criminal violations are often attempted innovations that didn’t work out. The rule that is derived from this is that the rate of change in a work system has an inverse relationship to the day-to-day acceptability of systemic violation. In effect this means that violations often need to be judged by what the motive was for committing it.

1.4.3. The problem of coping with the unexpected

Finally there is the problem of the **novel or unexpected situation**. Where the situation is novel and there are no existing rules to apply. Existing procedures and practices are often of little use. Sometimes it is even the case that application of the existing rules is what will cause the catastrophe. For example when a United Airlines 747 that experienced a door blow out en route from Honolulu to Auckland the captain abandoned standard procedures. For this he should strictly speaking have been prosecuted under federal US law. Instead he was rewarded for saving the plane. This is why more critical incidents occur in rigidly rule bound systems.

1.5. Implications for legislators and the courts

The challenge for legislators is to find mechanisms that embrace this complexity. There is no adequate recognition of the interweaved complexities we have described in the current regulatory environments anywhere in the world. The result is a strong element of judge and jury made law.

This may be a good thing – but it is only so if agents of the compliance mechanisms, judges and lawyers have a robust set of guidelines around which a particular situation can be assessed.

At present there is no such robust set of guidelines. This is because there is a fundamental conceptual divide between those who reduce the issue of compliance to a simple stimulus-response behavioural model, and those who want to adopt a holistic systems analysis. The best of modern research supports the latter model, but it is extremely difficult to devise a system of comprehensible legislation and regulation which embraces the true complexities, and which is applied consistently.

1.6. Suggested approaches for the reader

- Sections 1-3 provide the reader with an overview of the central propositions of the project.
- Section 4 is a detailed overview of the significant research areas and findings that inform the current state of knowledge.
- Section 5 is a summary of the state of the law vis a vis the research findings that inform that current state of knowledge about harm and the role of human error.
- Section 6 is an example of applying the current state of knowledge about harm and the role of human error to decisions already made by the courts to discover if the decision might be different in the light of that knowledge.
- Section 7 lists the reference material we gathered. The material is listed for the convenience of the legally inclined reader as a guide only.
- Sections 8 & 9 explore in greater depth matters to do with reality, cognition, leadership and management.
- Section 10 contains a Glossary of key terms that all readers should familiarize themselves with.
- Section 11 lists the sources we used and includes the seminal works.

Suggested reader strategies

- | | | |
|---|--------------------------|--------------------------------|
| ➤ | Casual reader | Sections 1-3 and Glossary |
| ➤ | Legal reader | Sections 1-7 and Glossary |
| ➤ | Manager/employer | Sections 1-6 and Glossary |
| ➤ | Research oriented person | Sections 1-4, 8-9 and Glossary |

2. ACCIDENTS, ORGANISATIONS AND THE LAW

2.1. Accidents at work

An **accident** is defined as an event that causes any person to be harmed; or in different circumstances, might have caused any person to be harmed. (HS&E Act, 1992).

Here we are concerned with such events when they occur in the context of organised economic activity. When an unsafe act is committed at such times there are three elements to consider.

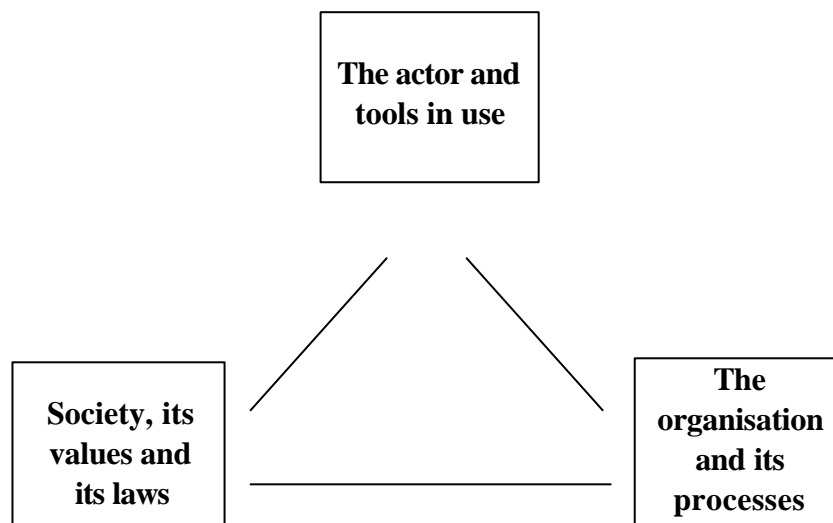


Figure 1. The causal elements of an unsafe act.

By the actor and the tools in use, we mean the specific people who are doing the work that is the context in which the accident happens. The word ‘tool’ is used in the very wide sense of anything that a person or persons use in order to help manipulate the environment to achieve the goal. Used in this sense language, for example, can be regarded as a tool. This is how the word is used in the field of cognitive psychology and of health and safety research.

The organization and its processes means the company or enterprise which provides the reason for doing the work and the structures and processes within which it is conducted. This arena of influence is often identified by the word ‘management’.

Society, its values and its laws concerns the influences on the behaviour of both individuals who are doing the work and those managers who organize it. This factor includes both the formal legislative and regulatory environment which embodies prevailing societal values, and also the informal rules – ‘the way we do things round here’ – which are often called ‘culture’, and which can be specific to a particular workplace.

2.2. Contradictions between the operation of the law and the nature of the workplace

There are a number of inbuilt and inevitable tensions, or contradictions in the motives and purposes associated with the three elements shown in Figure 1:

- between actions designed to prevent unsafe acts occurring and remedies that apply after an accident has happened;
- between the desire to prevent accidents and the desire to punish or obtain compensation from those who commit unsafe acts;
- between the costs of managing the risks associated with the activity and the need to maintain its economic viability or conduct it within a budget; and
- between the contributions that different members of the system have towards the way in which the activity is conducted in practice.

There is one particular and pervasive reason why these contradictions exist. Processes and structures which have as their purpose enforcement and punishment often have the perverse effect of reducing the opportunities for prevention and reduction of risk.

Practices which the current state of knowledge tells us best reduce the frequency of unsafe acts and accidents more difficult to institute and maintain when the enforcement procedures, punishments and penalties are harsh.

The reasoning behind the foregoing proposition are examined in detail throughout this report, but the contradiction is summed up in Figure 2.

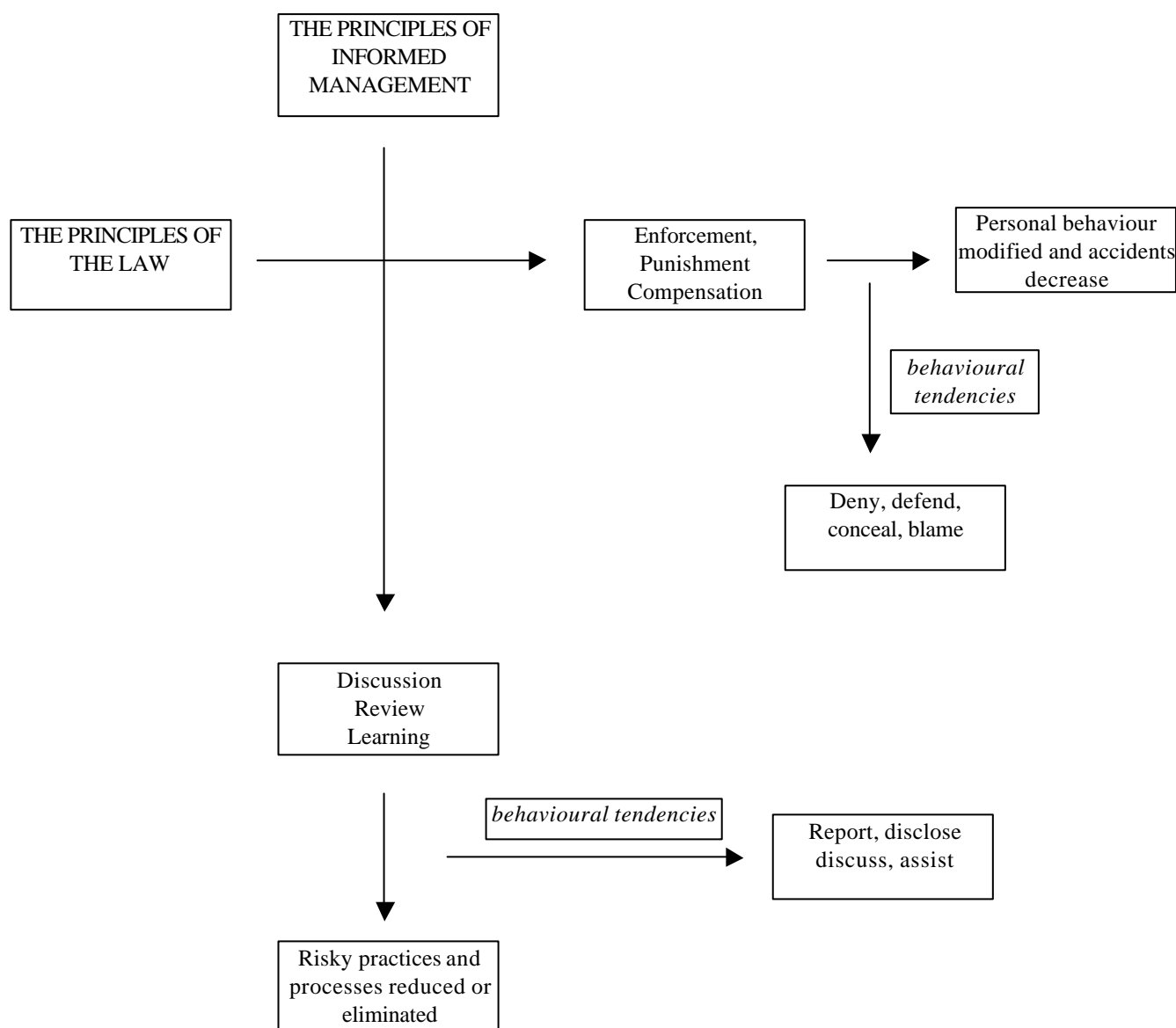


Figure 2. The tensions between prevention and punishment in dealing with accidents.

2.3. Influences on workplace behaviour and attitudes

There have been many international studies on what influences management and employee behaviour in workplaces. Attitudes to Occupational Health and Safety (OHS) are predominantly influenced by:

- the prevailing values of the organization;
- the resources available;

- knowledge and skill levels;
- the quality of relationship with regulatory inspectors;
- the nature of the management challenges facing the enterprise;
- the nature of human resource management.

The nature of the regulatory environment in itself does not appear on this list. Costs of insurance or compliance figure only as a resource issue.

Studies such as that of Quinlan and Mayhew (1998) and Salminen and Saari (1993) have contributed to a list of factors that influence the degree of health and safety risk found in organizations. Risk is increased by:

- economic and reward systems which are focused on cost control;
- complex chains of responsibility and decision making;
- lack of familiarity with the worksite due to employee turnover or the extensive use of contract labour;
- difficulty in applying the models of OHS management which are predominantly based on an assumption of workforce stability;
- poor levels of commitment to training.

In Australia Heiler and Shaw showed that when certain types of change occur health and safety suffers. These changes are:

- changes in the economic environment;
- changes in the regulatory environment;
- focus on performance and productivity in wage agreements;
- flexibility in hours;
- changes to non-work conditions of employment;
- growth in the use of marginal or contingent workers;
- increased functional flexibility;
- changes to the formal arrangements for consultation and participation.

The health and safety penalties that these changes impose can be managed for, but those instituting the changes can only do so if they are aware of the issue. Such sophisticated knowledge is often present in larger organizations, but is rarely found in small or medium sized businesses.

2.4. Types of organisation

The research into OHS has produced a number of typologies. They tend to be variations of the work done in Australia by Shaw, which differentiates between organisations that are:

- proactive* which describes a preventive approach;
- reactive* for enterprises which only respond to events; and

transitional which includes the enterprises which did not fit comfortably into either the proactive or reactive categories but which were undergoing changes that could lead them into one of the other categories.

One of the most significant differentiators between proactive and reactive organisations is the way in which they regard the regulatory environment. In proactive organisations management and personnel regard the regulations as a kind of checklist, and OHS officials as a resource to help them do better. By contrast reactive organizations tend to see the regulations as a problem and OHS officials as a burdensome problem to be avoided.

2.5. Distinguishing between types of organisation

The challenge for the design of regulations and the work of OHS officials is to design regulations and processes which do not penalise or alienate the former, which encourage the latter to change their approach, but which do not allow the recalcitrant to escape accountability for their actions. In the vast majority of situations where prosecution is considered, it is only the latter that should come to court. But often the public, lawyers and judges do not have enough information to discriminate between the two types. Furthermore difficult judgments need to be made when a critical incident occurs in a setting that is deemed to be transitional.

3. PUBLIC PERCEPTION

3.1. The different types of knowledge

In Section 1.1 we suggested that different groups of people might have different ‘knowledge’ about health and safety at work. The nature of this continuum can be understood if we look at the debate over the cause of the Erebus disaster, and particularly the different conclusions reached by Justice Mahon and Air Accident Investigator Kippenberger concerning the cause of the crash.

In the report of the Erebus Commission of Inquiry (1981), Justice Mahon concluded:

In my opinion, therefore, the single dominant and effective cause of the disaster was the mistake by those airline officials who programmed the aircraft to fly directly at Mount Erebus and omitted to tell the flight crew.

The Ministry of Transport’s Aircraft Accident Report (1980), conducted in accordance with internationally agreed procedures, produced a linear rather than systemic analysis and concluded, in contradiction of Justice Mahon, that:

The probable cause of this accident was the decision of the captain to continue the flight at low level toward an area of poor surface and horizon definition.

In summary these two positions can be summarised as in Figure 3:

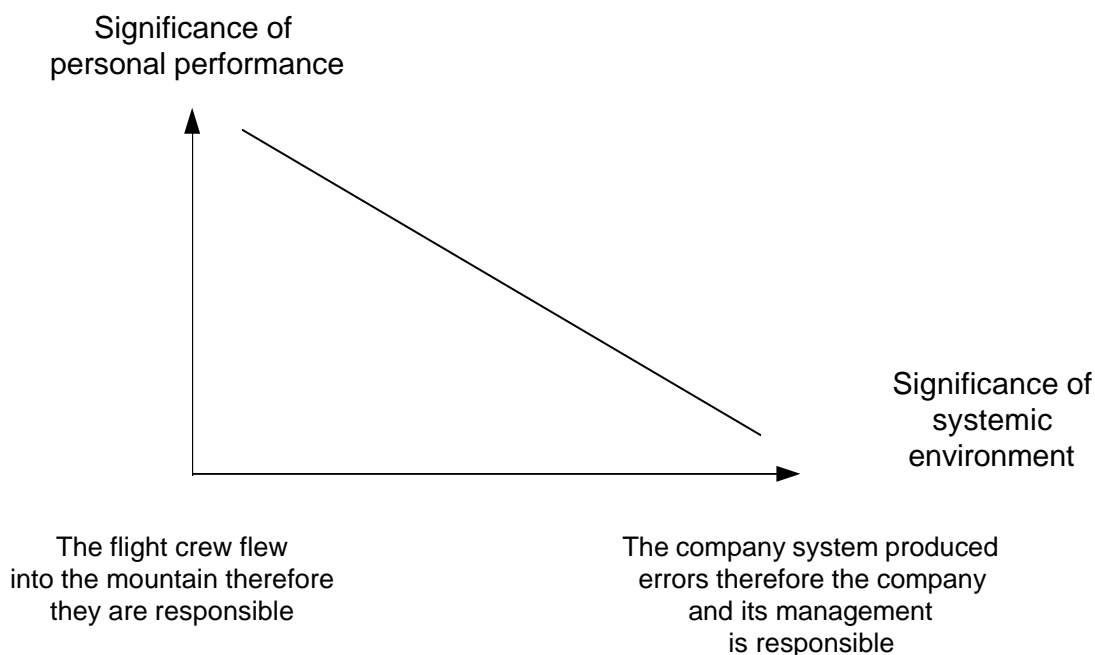


Figure 3. The continuum of perception between direct personal and indirect systemic causes of accidents.

This is exactly the same division of opinion that informs the manslaughter prosecution following the Ansett crash at Palmerston North. However, many say that they do not have a 'position' on this continuum, that they recognise that both individual and systemic factors need to be considered, and that they personally will reach different conclusions about causality according to the specifics of a given incident.

3.2. How perceptions vary

Unfortunately the 'common sense' approach that there is never one 'right' answer to the problems of individual responsibility or systemic failure when considering the causes of accidents is, in daily experience, distorted by five factors:

- even amongst health and safety professionals, and certainly among the general public, there is imperfect knowledge about the psychological and organisational systems research which helps to understand the human and systemic processes through which accidents occur;
- it is relatively easy to identify the direct causes of accidents, which are almost always to do with the actions of identifiable individuals, and relatively difficult to identify the indirect systemic links and processes which contribute to the emergence of a safety critical situation;
- especially when innocent people have been killed or injured there is a strong emotional human drive towards retribution, which by its nature is focused on 'somebody' or 'somebody';
- in many cases individual positions in a specific case are influenced by personal risk of being held responsible;
- value systems grounded in principles of 'individual responsibility' discourage looking beyond immediate cause and effect.

3.3. Judicial analysis of accident causation

The foregoing factors frequently interact. For example, in his report on Cave Creek, Judge Noble concluded:

What caused this catastrophe to happen? Standing back and viewing the evidence objectively, I am left with the overwhelming impression that the many people affected - victims and their families, department employees and their families, and others closely associated with the disaster - were all let down by faults in the process of government department reforms.

In this observation the judge was making a very sophisticated statement about the whole *system* of public administration and its role in the incident. Yet one of the effects of Noble's conclusion was that no single person or group of people were ever charged with an offence, and no single agency ever had to make recompense to the families of the victims. This offended the public's emotional and cultural need to see retribution, and eventually appeared to allow many of those implicated by Judge Noble (e.g. the Crown) to escape with no penalty at all. Indeed, one of the most important constraints in this event was that to accept Noble's conclusion was to accept that the Crown, in this case, might be required to take an action against itself.

3.4. The purposes of prosecution

There is a further consideration when answering the question 'whose knowledge?', and it specifically concerns the operation of the law. When a prosecution follows an accident is the purpose to satisfy the public's emotional need for retribution, or is it *pour encourager les autres* - to provide a mechanism to discourage people from committing unsafe acts and thereby contribute to the cause of improved safety?

The passions and emotions triggered when an organisation fails, and people are killed, releases large amounts of energy, much of which is directed to identifying a target for retribution. Some more thoughtful energy is directed towards identifying causes and the generation of solutions or remedial actions such as to prevent such a thing happening again. These are the general responses we expect because it is conventional to accept:

- that cause and effect are in a linear causal relationship;
- that error and accident are avoidable happenstance's; and
- that humans acting in complex systems are unaffected by their operational context.

The prosecution of the flight crew for manslaughter following the crash of an Ansett aircraft near Palmerston North is a good example of these matrices at work in practice.

- Is the purpose retribution or to contribute to improved air safety, or both?
- Is there a difference between prosecuting a highly trained and motivated person and one who is untrained and unmotivated?

Whatever the answers, from a health and safety point of view it is important to ask the question 'what does research tell us about the role of retributive justice in promoting workplace health and safety?'

3.5. What Is 'Reasonable' knowledge?

There is an additional overarching consideration in discussing ‘the current state of knowledge’ and it is the question of what it is reasonable to expect people to know. One of the clear conclusions of our work is that there is a body of scientific knowledge about the causes of accidents which is much discussed in academic circles, and also in industries where there are very high risks of harm to members of the public - such as aviation and the nuclear industry, which is little known elsewhere. How much of this knowledge is it reasonable to expect a judge to have? Or lawyers, jurors, directors, managers, supervisors or line workers?

In the next section we move to review the current state of technical knowledge about health, safety and accidents.

4. THE CURRENT STATE OF KNOWLEDGE

This section is an overview of the fundamentals of current research. Our imaginary reader is a non-specialist with a reason for interest, such as a barrister or anybody who is responsible for the safety of others i.e. a manager in a manufacturing plant. Those wishing to understand the matters in greater detail should read Sections 8 & 9.

This section summarises recent and current research developments into human error in organisational contexts. Much of this research has been generated by industries in which health and safety issues have very high stakes, such as in commercial aviation and power generation. However it is now clear that they apply equally to all forms of human error, regardless of significance and setting.

4.1. Types of accident.

An **accident** is defined as an event that causes any person to be harmed; or in different circumstances, might have caused any person to be harmed. (HSE Act, 1992).

In the workplace there are two kinds of accidents,

- **individual accidents;** and
- **organisational accidents.** (Reason, 1997).

Individual accidents are those that are generated by the acts of a specific individual or group, while organisational accidents have multiple causes involving many different people operating at many different levels, performing different functions and often working on many different locations. In practice almost all workplace accidents are a function of the interplay between individual and organisational factors.

4.2. Causes of accidents

The most rigorous research into accident causation has come from the aviation industry. 80% of airliner accidents are still attributed to human error, and the largest proportion of these now occur when the pilot flies a perfectly sound and airworthy aircraft into the ground, known technically as CFIT- Controlled Flight Into Terrain. Although flying in an airliner is a remarkably safe activity, accident rates have stabilised and there have been few recent gains in reducing their frequency. Much recent research has been generated by the unacceptability of this in the airline industry.

Until the late 1970's the prevailing attitude was that pilot error accidents pointed to two types of problem:

- a deficiency in the person, and that therefore better systems of pilot selection and training were the first route to lower accident rates - fix the person;
- engineering design was not taking sufficient account of the person-machine interface, and that improved cockpit layout and technology provided the second route to greater safety - fix the technological context to make the person perform better.

Both approaches produced gains, but not nearly enough to satisfy the demands of the public. Erebus raised both questions - in that case a very highly trained, highly regarded and highly motivated flight crew flying a technologically state of the art aircraft had a CFIT accident. The Judge believed that assumptions the crew held about the technical system which they believed made them safer proved fatal; the computer technology installed to eliminate error provided the path to an error.

4.3. Approaches to eliminating error

What then is the route to error elimination that will reduce the frequency of aeroplane hull loss?

One response is to take the technology driven route. If humans can't be induced to stop making mistakes, then eliminate the human - as the source of error - from the task as far as possible. This philosophy drove the design philosophy of Airbus Industries in Europe and generated the famous aviation industry joke that an Airbus is designed to be flown by a pilot and a dog - the pilot is there to feed the dog and the dog is there to bite the pilot if s/he touches anything.

But the automated flight deck has so far failed to significantly reduce accident rates. What researchers found that was alarming was that it led to different KINDS of accident in much the same way that word processors with spell checks did not eliminate newspaper misprints, but merely led to different kinds of misprint. Such ambiguous performance outcomes of automation are encountered in most work settings

Justice Mahon, and a number of other early challengers to conventional thinking about accidents, stimulated a new line of thought about human error. This new approach started with the proposition that it is in the nature of people to make mistakes. But human performance does not take place in a vacuum, it takes place in a context of complex technological, social and organisational systems. Mistakes happen within such systems, and those systems themselves can function in ways that stimulate or depress error producing behaviour. We can never eliminate mistakes completely but we can reduce the probability of them occurring. The strategy therefore is:

- to take steps to create the optimal working environment for the reduction of error; and
- to insert defensive components into systems which will reduce the likelihood of an error leading to a catastrophe through the early identification and correction of accident promoting errors.

4.4. The 1970's: Cockpit resource management .

One of the immediate consequences of this approach was the emergence of new thinking about flight crew training in which attention is paid to the ways in which the crew manage their whole environment - including their relationships with one another. There have been many accidents where the first officer has known that the captain was apparently in error, but remained silent because of the traditional hierarchical command structure of the airline's culture. This new approach, first described in the late 1970's, was called CRM - Cockpit Resource Management and considered the airliner flight deck as a socio-technical system.

4.5. The 1980's: Crew resource management

While Mahon was a pioneer, it was in Canada that the catalyst for significant change occurred. In 1989 an Air Ontario (an Air Canada subsidiary) airliner crashed at Dryden. The immediate cause of this accident was the fact that the plane accumulated snow and ice on its wings during a delay in obtaining takeoff clearance, an event which tipped a preceding series of errors into a catastrophic event. One contributing factor was that the cabin crew could see that this was happening but failed to alert the flight crew. This led to an extension of the notion of team communication as a component of flight safety to the whole crew. The C in CRM became 'Crew'.

4.6. The 1990's: Corporate resource management

The Dryden accident investigation (1992) went even further. It identified a range of contributors to an accident in which all involved - flight crew, ground personnel and company equipment - performed in a highly dysfunctional manner. These factors included:

- job instability following a recent company merger;
- high employee turnover;
- low morale;
- poor company support for operational personnel.

These immediate factors were, according to the Commission, triggered by 17 inadequate corporate processes, which included such items as:

- disparate allocation of resources to production and safety activities;
- inadequate safety management;
- inadequate change management;
- deficiencies in operations and maintenance;
- deficient monitoring and auditing;
- deficient handling of information;
- deficient inspection and control;
- inadequate purchasing of spares;

- low motivation;
- inadequate policy making;
- inadequate goal setting;
- deficient checking.

The Dryden investigation has had a profound affect on airline approaches to safety. British Airways is a pioneer in identifying the relationship between corporate culture, climate and flight crew performance. As Hampton-Turner (1990) put it ‘The culture at 30,000 feet is different from the culture at ground level.’ The discovery here was that the safe methods of operation of the flight crew could only be sustained if they were congruent with those of the whole organisation. For example you cannot expect air crew to communicate in a free exchange on the flight deck if, when they land, the captain and the first officer are treated by flight operations management in a hierarchical manner based on rank. The ‘C’ in CRM is coming to mean ‘Corporate.’

4.7. Human Error – the James Reason model

These developments took place within the context of an emergent theory based on aviation studies. The initial model was developed by James Reason, Professor of Psychology at the University of Manchester. Although many researchers have now extended the model, it remains a fundamental and useful tool for analyzing accident causation and health and safety deficiencies.

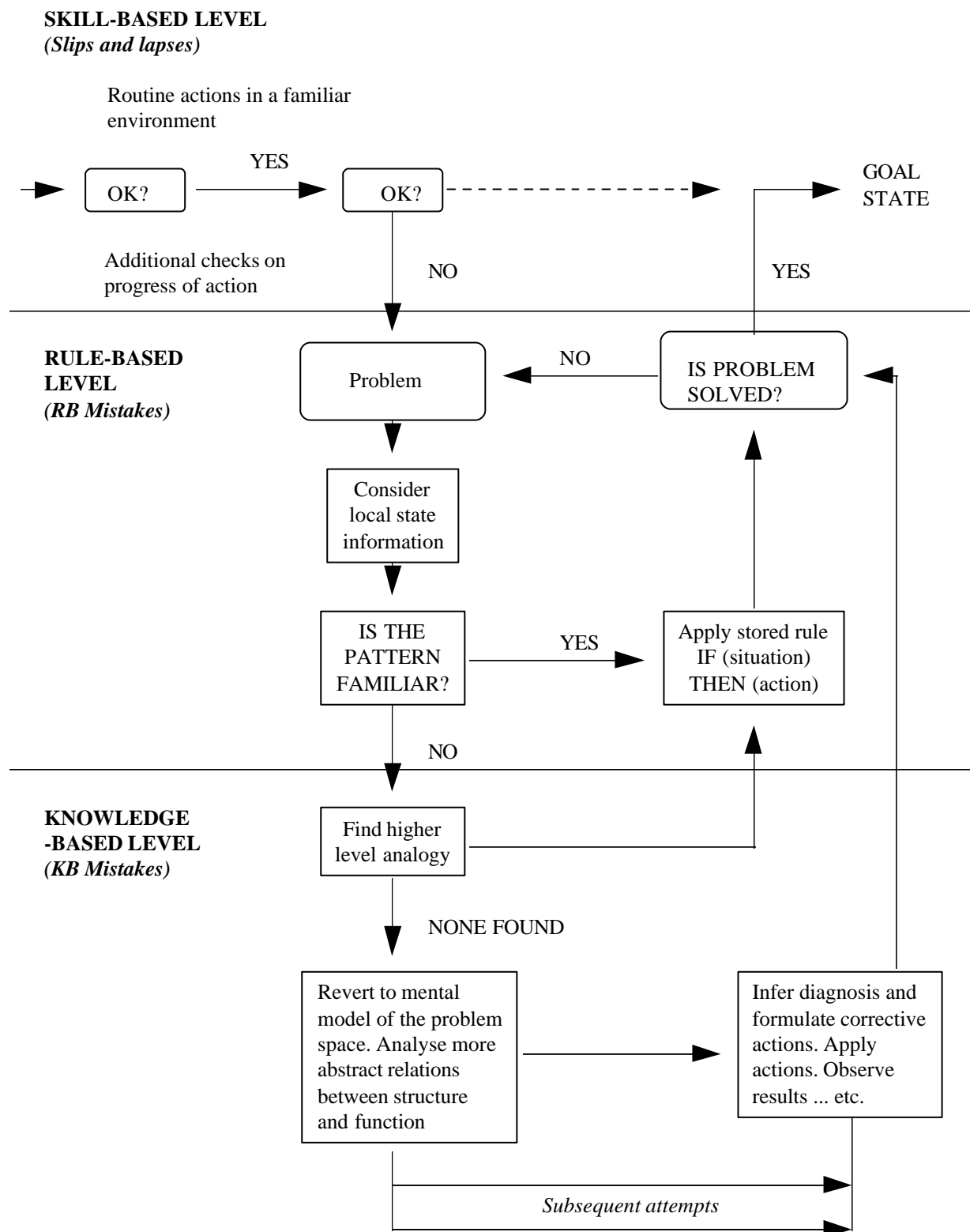
In their book ‘Beyond Aviation Human Factors’ (1995) Maurino, Reason, Johnston and Lee commence with typologies of performance and error.

Most people involved with organisational management will be familiar with Rasmussen’s (1980) three performance levels:

- Skill-based performance, in which familiar routine tasks are carried out in a largely automatic fashion;
- Rule based performance, in which unusual events which follow predicted and well known patterns require the selection and application of responses which the operator has trained for, practised and previously used in similar situations;
- Knowledge-based performance in which novel situations are dealt with by thinking through the issues we are confronted with and applying our knowledge and experience as we tentatively reach towards a solution.

Reason links these three types of performance together to create a generic error modeling system, shown in Figure 4.

Figure 4. Generic error modeling system



4.8. Activity theory

In fact all such performance occurs in a context. Maurino et al's model is implicitly predicated on a body of theory called Activity Theory, a body of theory about intellectual development derived from the work of the Russian psychologist Vygotsky.

For the purposes of this paper it is sufficient to identify two main propositions of Activity Theory:

- All activity at work takes place in a context which is social in nature. People perform tasks in order to achieve specified goals. How they do this, and how effectively and efficiently they do it, is mediated by the nature of the environment - that is:
 - the tools and artifacts that are available;
 - the way in which the goals are defined;
 - the operational rules of the organisation;
 - the nature of the social relationships amongst those directly and indirectly involved;
 - the ways in which labour is divided and responsibilities allocated.

The whole system which all these elements collectively describe is called an 'activity system';

- When an activity system or a part of it encounters a 'disturbance' or a 'contradiction' **learning** takes place (or may take place).

4.9. Disturbances to systems

A **disturbance** is any event that interferes with the expected course of the specific activity. Disturbances may be something going wrong, an unexpected change in the environment, new personnel, changed rules, changed tools or technology, and so on. Disturbances can also be a specific injunction to innovate. Disturbances need not be rare - they can be the normal state in some forms of activity. In a study of a TV outside broadcast crew by Engestrom (1993) he noted that in the course of a 10 hour working day, the team encountered a disturbance on average once every 37 seconds.

4.10. Contradictions in systems

A **contradiction** occurs when an activity is beset by an inconsistency in the system. For example a work team may be urged to pay attention to producing high quality products, but marketing and shipping departments routinely overturn quality requirements in order to meet order deadlines. Such contradictions will eventually be resolved either by the production team abandoning its commitment to high quality product, or by a change in behaviour by the other departments.

If we apply the learning through disturbance proposition of Activity Theory to Rasmussen's three levels of performance we can see that *generative* learning is learning that occurs mainly at the level of knowledge based performance in order to better achieve the defined goals of the group. We note that knowledge based performance is both where progress, innovation and improvement take place, and where serious error is most likely to occur.

4.11. Learning to eliminate error

The site of the best learning strategy, generative learning, is likely to be the site of greatest error.

This is a difficult tension to reconcile in most activities. Where safety is an issue the goal must be to reduce the activity as far as possible to one where the environment is patterned or predictable to maximise the use of skills based and rule based performance and to minimise the need for knowledge-based performance, while at the same time equipping operational personnel with the capacity to engage in knowledge-based performance in a crisis or in order to take the organisation forward.

An example of such performance occurred when a hold door blew out tearing a large hole in the side of a United Airlines 747 en route from Honolulu to Auckland. The captain landed the aircraft safely in circumstances where not only did existing rules and procedures offer no solution, but subsequent simulator replication demonstrated that if he had pattern matched and applied rules from his normal, procedural repertoire, the aircraft would have crashed. To safely land the aircraft he had to simultaneously discard normal procedural rules of performance and draw on his experiential knowledge of the relationship between those rules and the underlying rules of flight to hypothesize and manage the performance of the aircraft in a uniquely novel situation.

4.12. Types of human error

Turning now to the sorts of errors typically found at work in organisations.

Individual accidents can be said to be due to human error. **Human Error** (see Glossary) is a generic term that includes all occasions in which a planned sequence of mental or physical activities fails to achieve its intended outcome, and when these failures cannot be attributed to chance (Reason, 1990). Therefore, human errors are associated with intentional activity and failures to achieve goals.

Reason (1990) proposes a typology of human error in work performance. The typology suggests that errors fall into the following categories:

- Slips and lapses - loss of attention, failure of memory, or errors of perception in the course of carrying out routine (skills based) tasks;

- Rule Based mistakes, which fall into two categories - the application of a good rule which is inappropriate to the actual situation, or the formulation of a bad rule (one that is flawed);
- Knowledge Based mistakes, where wrong conclusions are reached in trying to reason in a novel situation;
- Violations, where established procedures and rules (which may be natural scientific or mathematical laws and rules) are not followed. Violations can be corner cutting, the consequence of changed rules where they are still being formulated for a relatively new but routine situation, or the consequence of the operator being ignorant of what is actually possible or required. As we have indicated above violations may also be experimental responses to entirely novel situations. For this reasons violations are ambiguous events which can be positive and developmental if grounded in sound knowledge based performance.

In the vocabulary of systems safety the first three categories here are grouped under the collective term 'errors', and 'violations' is used to distinguish the fourth category.

The typology and the relationships can be illustrated thus:

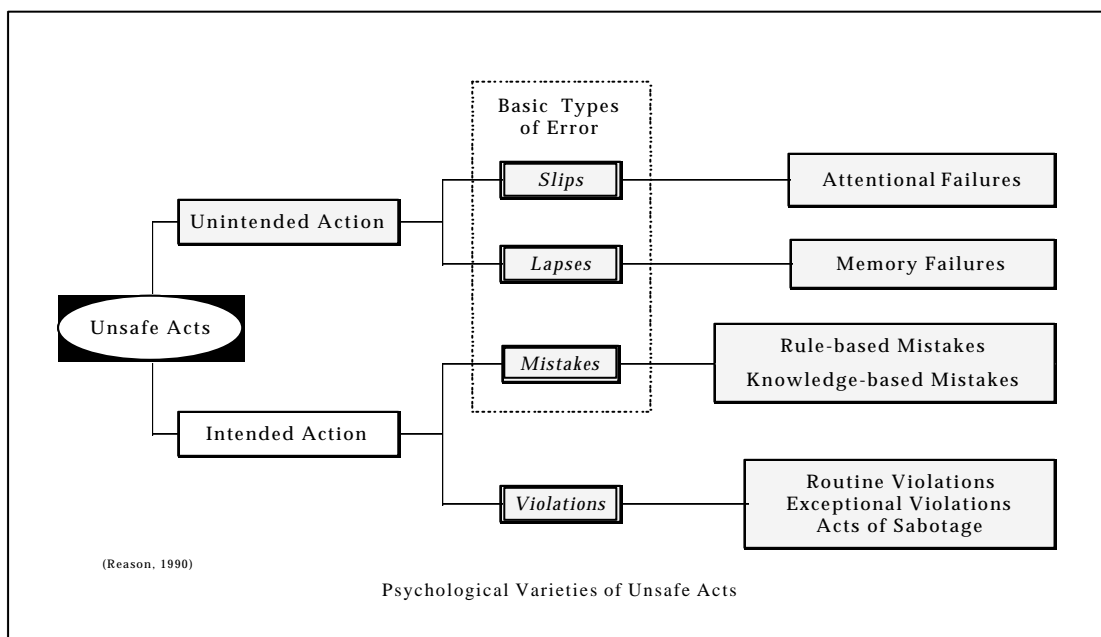


Figure 5. A typology of unsafe acts (Reason, 1990).

4.13. Stability and instability

An important consideration is that the relative significance of these different types of errors concerns the operational environment in which a specific human performance is taking place.

In conditions of **relative stability**, where much of what is being done repeats familiar patterns, then slips, lapses and rule-based mistakes are likely to dominate the causes of error.

However in conditions of **relative instability** it is knowledge-based mistakes that become the primary source of error.

We also need to note a further complexity. Where a novel situation is encountered and problem solving based on the analysis and reconfiguration of knowledge is required, the solution will almost inevitably require the violation of existing rules. In other words violations may be error producing or error avoiding actions depending on the circumstance.

The likelihood of human error is affected by the state of arousal of individuals, which in turn is determined by their level of stress, whether or not they are fatigued, their state of health, whether or not they are under the influence of drugs, their level of competence, the degree of familiarity with the situation being encountered, working conditions, the attitudes of those around the individual/s, including the possibility of hazardous attitudes and fallible decisions by management.

In the workplace all of the external influences on human performance listed above can be identified and, to a greater or lesser extent, defended against by management practices. Therefore it can be said that:

the frequency of individual accidents in any workplace is a function of the level of individual arousal and the extent to which defensive provision is made for the influence of unfavourable phenomena in the environment.

In the taxonomy of error and unsafe acts presented above only two, violations as acts of sabotage and errors committed while under the influence of drugs voluntarily taken, can unequivocally be understood as primarily a personal responsibility of the actor. In all other cases the causes are likely to be complex and multi-factorial.

4.14. Slips and lapses

Slips and lapses occur primarily due to failures of attention or short-term memory. Human attention is more likely to be sub-optimal if the environment is disruptive. External distractors may be:

- entirely controllable by either the individual or the management of the organisation within which the individual works;
- uncontrollable but with the likelihood of slips resulting being predictable;
- unpredictable in terms of precise timing but generally predictable in terms of their probability.

An example of a slip inducing circumstance that is both controllable and where the likelihood of slips eventuating is predictable, is where an individual is excessively fatigued. However the presence of fatigue may be the result of:

- choices made by the individual;
- requirements imposed by the management of the organisation;
- the intrusion of unexpected disruptive events into the life of the individual or the work of the organisation; or
- a combination of these factors.

But whatever the cause, if a fatigued individual commits unsafe acts at work in a hazardous situation, there must be, to some extent at least, a weakness in the defensive systems of the organisation.

An example of an uncontrollable distractor for which the possibility of slips is predictable is when there is a change of routine in the work processes of the organisation. For example if a company seeks to make loading of trucks more efficient by building a loading bay where there wasn't one before, then while the new procedures are being internalised employees are highly likely to slip back into the previous practices. If these previous practices involved standing close to a reversing truck, but now there is a concrete deck that might trap the unwary employee, then what was previously a relatively safe act becomes an unsafe one. Such situations are not avoidable because of the nature of human cognitive processes, but they are manageable and can be defended against by sound management practices.

The most commonly encountered distractor, which is not predictable in terms of timing, but which is predictable in terms of general frequency and probability, is machine breakdown.

4.15. Rule-based mistakes

Mistakes are primarily problem-solving errors. They are deeply rooted in the individual's existing knowledge, and analytical capabilities. **Rule-based mistakes** occur when a known and predicted situation arises for which rules exist for an appropriate response (either formal rules based on manuals or informal rules derived from the personal experience of individuals. Mistakes occur when the situation is misunderstood and the wrong rule is applied, or the formal or informal rules are not in fact adequate to deal with the situation.

One of the best-documented examples of a rule-based mistake was the crash of the British Midland Boeing 737 at Kegworth, England in 1989. The flight crew closed down the wrong engine when one engine experienced a turbine failure. This action was found to be the result of a combination of misreading of poorly designed instruments coupled with misanalysis of the physical flight characteristics of the aircraft, the latter being attributable to information overload under stress.

Management practices can reduce the frequency of rule-based mistakes. These include:

- adequacy of training;
- organisational management of how much stress is placed on individuals;
- the clarity and adequacy of formal instructions and manuals; and
- the design of machines and equipment .

But another key factor is the organisational culture and whether or not it promotes and values clear and open communication between individuals. This is because, as Activity Theory suggests, problem solving occurs best as a social activity provided that interpersonal communications are open and clear.

4.16. Knowledge-based mistakes

Knowledge-Based mistakes are similar in nature to rule-based mistakes, except that they occur in novel situations for which rules do not exist, and also in exceptionally complex situations. In general terms they occur because of the internal mental processes of foreclosure and selectivity, and for the external reasons that the information available is incomplete or inadequate. Specifically these processes are:

- Selectivity. Paying undue attention to the wrong feature, or not paying attention to the most important feature, of a problem;
- Workspace Limitations. It is cognitively easier to formulate a conclusion to a problem which uses the information in the order in which it was gained, rather than a conclusion which requires the reordering of information;
- Out of sight, Out of mind. We ignore what is not immediately present, and conversely give undue weight to that which is present;
- Conformation bias. as a problem solving trajectory progresses we tend to slip further and further into the selection of information according to whether or not it confirms our early hypotheses;
- Overconfidence. Once a plan of action has been formulated, we tend to adhere to it and defend it, even in the face of later contradictory evidence;
- Biased reviewing;
- Illusory correlation;
- Halo effects;
- Problems with causality.

When Bill Mansfield, the Director General of Conservation, reported to parliament in 1994, he demonstrated elements of all the foregoing knowledge-based mistakes when he wrote:

“People have asked why the need for a nationally consistent project management system, as specified by the Commission of Inquiry, was not identified earlier. The question has haunted me and my colleagues over the past many months. The answer is not simple, as Judge Noble has concluded. With the benefit of hindsight, and in the light of the terrible consequences, the lack of an effective project management system at Cave Creek is hard to accept and hard to explain. However, to use a medical analogy, it is difficult to diagnose a disease if there are no symptoms.”

4.17. Violations

Violations. As suggested in the previous section, violations are relatively straightforward in relatively stable circumstances where almost everything that occurs is already within the experience of individuals. However in rapidly changing settings, where novel events are frequent occurrences, violating established practices may not only be acceptable, but be essential. This can even happen in highly rule-bound environments. At least two airline pilot ‘heroes’ saved their aircraft and the lives of their passengers by disregarding their flight manuals and their standard operational procedures in the face of unforeseen crises. Yet in most cases such actions would lead to disciplinary action of the most severe kind.

Individual accidents are always the result of a failure of individual performance, but such failures cannot be totally eliminated because of the nature of human cognition and the fact that human beings are quite poor information processors.. However these failures can be the result of solely individual decisions, or can be strongly influenced by external factors beyond the control of the individual concerned. In any event in most case the probability of individual accidents occurring can be predicted, and error inducing circumstances can usually be identified.

4.18. Reducing error

Once error inducing or error prone circumstances have been identified it then becomes possible to minimise their frequency and ameliorate their effects. This involves three management strategies:

- reducing or eliminating error inducing phenomena;
- initiating procedures which help to minimise the translation of unavoidable hazards into accident frequency, and;
- establishing procedures which defend the organisation or work process against the consequences of errors that do occur.

So in any activity performance is dependent on *individuals* functioning in a *context or situation*. As the activity proceeds *errors* and *violations* may be committed which result in the goal not being achieved, or being achieved with sub-optimal effectiveness or efficiency.

4.19. Organisational factors in unsafe actions

In 'Human Error' Reason (1990) brings together all the components of human and organisational performance we have discussed into a holistic systems model of catastrophe.

His central proposition is that one can never totally eliminate errors and violations from human performance. Indeed, as we have explained, errors and violations and reflection upon them are the raw material of innovation, progress and performance improvement. Reason shows that the *probability* of errors and violations occurring can be predictably influenced by:

- ensuring that the individual operators are best suited for the activities they are expected to carry out; and
- ensuring that the situation or context is organised and managed in such a way that operators are less likely to commit destructive errors and violations.

Finally, Reason argues, by systematically predicting those aspects of an activity where errors and violations are still most likely to occur, or where an error or violation is likely to produce catastrophic consequences, we can identify where defensive checks and procedures need to be established.

This systematic prediction and identification of requirements for defensive checks and procedures, and their funding and implementation are key management functions.

Reason uses four terms to distinguish between the direct causes of accidents, and those that are embedded in the context of the activity system. They are defined here and will be used in the remainder of this report.

- **ACTIVE FAILURES.** These are the direct actions - errors, violations, equipment failures, or conditions in the natural environment - that cause the catastrophic event.
- **LATENT FAILURES.** These are the deficiencies in the organisational environment that create an operational situation in which the probability of active failures occurring is increased.
- **DEFENSIVE FAILURES.** These are deficiencies in the procedures of the organisation that mean that it does not adequately scan activities in order to identify and remedy errors and violations before they produce catastrophic consequences.

- **ORGANISATIONAL PATHOGENS.** These are the core systemic failures that allow latent failures to develop, and active failures to occur unchecked. Maurino et al list the main organisational pathogens as being:

- managerial oversights;
- ill-defined policies;
- lack of foresight;
- lack of awareness of risks;
- inadequate budgets;
- lack of legal control over contractors;
- poor design, specification and construction;
- deficient maintenance management;
- excessive cost cutting;
- poor training and selection of personnel;
- blurred responsibilities;
- unsuitable tools and equipment;
- commercial pressures;
- missing or flawed defences.

Reason groups these and relates them to organisational processes in Figures 6 & 7:

<i>Error factors</i>	<i>Common factors</i>	<i>Violation factors</i>
<ul style="list-style-type: none"> • Change of routine • Negative transfer • Poor signal-noise ratio • Poor human-system interface • Poor feedback from system • Designer-user mismatch • Educational mismatch • Hostile environment • Domestic problems • Poor communications • Poor mix of hands-on work and written instructions (ie too much reliance on knowledge in the head) • Poor shift patterns and overtime working 	<ul style="list-style-type: none"> • Time shortage • Inadequate tools and equipment • Poor procedures and instructions (ambiguous or inapplicable) • Poor tasking • Inadequate training • Hazards not identified • Undermanning • Inadequate checking • Poor access to job • Poor housekeeping • Bad supervisor-worker ratio • Bad working conditions • Inadequate mix of experienced and inexperienced workers 	<ul style="list-style-type: none"> • Violations condoned • Compliance goes unrewarded • Procedures protect system not person • Little or no autonomy • Macho culture • Perceived licence to bend rules • Adversarial industrial climate (them and us) • Low pay • Low status • Unfair sanctions • Blame culture • Poor supervisory example • Tasks affording easy shortcuts

Figure 6 Personal factors

<i>Error factors</i>	<i>Common factors</i>	<i>Violation factors</i>
<ul style="list-style-type: none"> • Attentional capture Preoccupation Distraction • Memory failures Encoding interference Storage loss Retrieval failure Prospective memory • Strong motor programs Frequency bias Similarity bias • Perceptual set • False sensations • False perceptions • Confirmation bias • Situational unawareness • Incomplete knowledge • Inaccurate knowledge • Inference and reasoning • Stress and fatigue • Disturbed sleep patterns • Error proneness 	<ul style="list-style-type: none"> • Insufficient ability • Inadequate skill • Skill overcomes danger • Unfamiliarity with task • Age-related factors • Poor judgement Illusion of control Least effort (cognitive economics) Overconfidence • Performance anxiety (deadline pressures) • Arousal state Monotony and boredom Emotional states 	<ul style="list-style-type: none"> • Age and gender • High risk target • Behavioural beliefs (gains outweigh risks) • Subjective norms condoning violations • Perceived behavioural control • Personality Non-compliant Unstable extrovert • Low morale • Bad mood • Job dissatisfaction • Attitudes to system Management Supervisors Discipline • Misperception of hazards • Low self-esteem • Learned helplessness

Figure 7 Situational and task factors

Reason's core model (Figure 8) links all the factors we have discussed in this section into a single model of accident producing pathways in organisations.

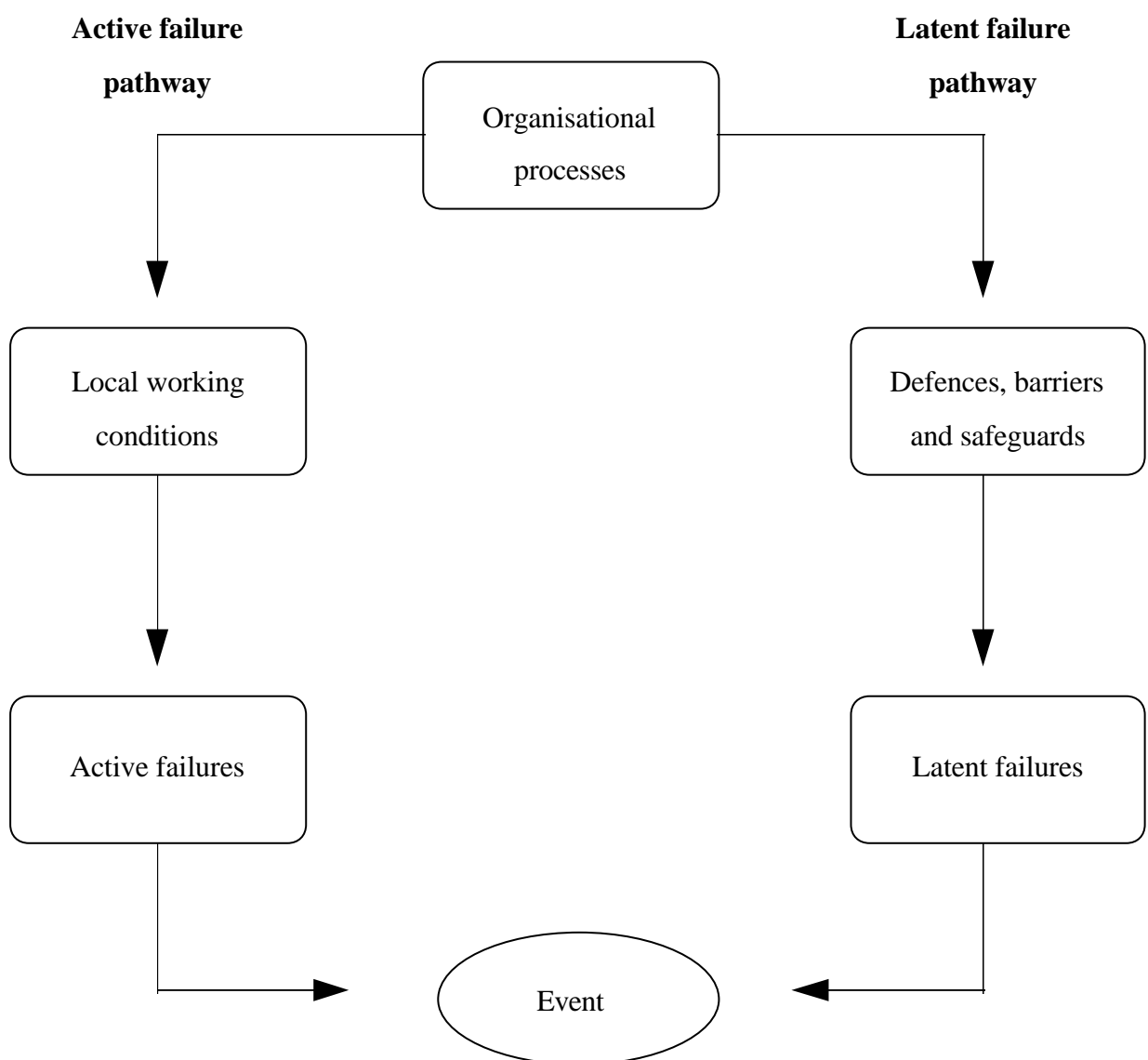


Figure 8 Showing active and latent failure pathways

This model, named for its inventor, is becoming a standard analytical tool of the aviation safety community. However the Reason model:

- can be applied as an analytical tool to safety *and* performance evaluations in organisations of all kinds; and
- becomes more powerful when integrated into broader theories of learning and cognition such as Activity Theory; and
- helps to systematically identify indirect responsibilities for an accident.

4.20. Systems safety and responsibility

Of particular interest to judges and lawyers is what insights the foregoing can provide in understanding responsibility and liability for an accident.

The question of responsibility for events such as the Cave Creek disaster or the Gisborne Cervical Screening event has not unexpectedly occupied the public mind more than has the question of preventing a recurrence. The research we have outlined has redefined what responsibility means in such circumstances. An argument based on this approach does not seek to identify individual persons deserving of blame, rather it seeks to identify what responsibility means in the context of the Reason model and how it is exercised to prevent the recurrence of catastrophe. The Reason model gives pointers to which *functions* of an organisation are the locus of responsibility.

In approaching this question it is first necessary to consider the concept of probability. After Cave Creek many public statements from those employed in the Department of Conservation, from those who manage the public sector, from the Executive and those familiar with the Westminster tradition of Ministerial Responsibility, suggested that we could not hold responsible individuals who, amongst other things:

- i) said they had no personal knowledge of the location of Cave Creek, or
- ii) said they did not know that there was a viewing platform at Cave Creek, or
- iii) who had never physically been to Cave Creek, or
- iv) who purchased outputs, for a price, from the Department of Conservation, or
- v) who were responsible to the purchaser for the quality of outputs.

Such statements confuse active and latent failures. Latent failures are not predictive of a particular accident, rather they increase the probabilities that an accident will occur. And it is latent failures in a system that are critical. This fact is proved by a simple test. If we refer to the Reason model (Figure 8) and apply it to the findings from Cave Creek we can demonstrate the relative significance of active and latent factors by asking the questions:

“If we eliminated the specific factors at Cave Creek as listed in the left hand pathway, but did nothing about those in the right hand pathway, what is the probability of a similar problem situation arising in the future?”

and then

“If we had corrected the factors in the ‘Organisational Processes’ and ‘Latent Failures’ boxes prior to the collapse of the Cave Creek platform, what is the probability that the factors in the left hand column would either not have occurred, or have been corrected before a catastrophe occurred?”

Answering these questions clarifies the primacy of latent failure in accident causation. Their correction is also the responsibility of senior management. In this case it is clear that the deficiencies in organisational processes (‘pathogens’ in Reason’s words), and the factors listed in the ‘Latent Failures’ box, vastly increased the probability that at some time and some place a catastrophic failure would occur.

If ‘the current state of knowledge’ is taken to mean knowledge of modern research summarised in this report and if senior management and policy makers allow organisational pathogens to develop to increase the probability that a catastrophic error will occur, then the rational outcome is that they are at least partially responsible for any failure. The question is whether it is held to be reasonable that they have this knowledge and act on it.

4.21. Probability

The question of probability is a highly developed field in the study of human error. Working in power plants, Williams (1988) has found that where a routine and familiar task is being conducted by a competent and motivated workforce, the probability of error is consistently 0.0005, or that an error will occur once in every 200,000 cycles. At the other extreme where personnel are carrying out a novel task with no clear idea of the likely consequences (in other words they are engaged in knowledge based performance) the error probability is 0.75, or an error is likely to occur once in every 166 cycles. These probabilities are known and have been experimentally demonstrated.

Of course not all errors lead to accidents. Well conceived defensive provisions mean that most errors are corrected before an accident occurs. For example in the US airline business, where the safe operation of an aircraft depends on at least four error free environments - building the aircraft, maintaining it, operating it, and in air traffic management - accidents occur about once in every 700,000 flights.

4.22. Multipliers

Williams also identifies the multiplier effect of major error producing conditions. Some of these which appear relevant in the case of Cave Creek are (with the multiplier indicated in brackets) are:

- Unfamiliarity with the task (17)
- Lack of clarity about organisational goals (17)
- Time shortage (11)
- Poor signal:noise ratio (10)
- Information overload (6)
- Poor feedback from system (4)
- Inexperience (3)
- Poor instructions on procedures (3)
- Inadequate checking (3)
- Educational mismatch of person with task (2).

The multiplier means that where the specified conditions exist the likelihood of an error occurring is the indicated number of times (in brackets) more likely to occur. So, for example, an operator conducting a novel task under time pressure is likely to make an error once in every 15.1 cycles (166/11).

A point of significance is that the factors with very high multipliers are very much open to influence by the ways in which the organisation is managed. Senior managers in organisations may not be directly responsible for particular failures, but they are responsible for allowing known probability multipliers to operate unchecked.

4.23. Individual competence

The question of *individual* competence and performance becomes relevant when a particular individual is found to be committing more errors than is indicated as typical by the basic error probability *multiplied by the multipliers indicated by each of the factors which are present*. For example if we find that an operator who, when confronted by a novel task and who is being expected to deal with it under time pressure, makes more than one error in every 15.1 cycles, we can then reasonably examine competency issues and seek to take remedial action such as additional training. In less critical organisational situations error is very often shrugged off with the words ‘people make mistakes’. But as we have shown evaluative procedures are available to ascertain whether people are making more mistakes than might normally be expected, and why they might be doing so.

4.24. Bringing the factors together

If we now return to the list of error producing factors from Cave Creek (4.22) and assign them to the list of Organisational Processes and General Failure Types in Figure 8 (p.30), and assess the extent to which each type may have contributed to errors, we then begin to gain a better understanding of where current knowledge suggests responsibility lies.

The most influential organisational process in the Williams list is ‘Stated goals’ and the ‘General Failure Type’ associated with it is ‘Incompatible Goals’. This is clearly present in this case, as is

clearly stated by Mr Hunn in the quotation above. The incompatible goals of the Public Finance Act and the State Sector Act described by Mr Hunn seem to be causally linked throughout the senior management of the Department of Conservation, through to the conservancy management, to the builders of the platform. This being so the State Services Commission and the senior management of the Department of Conservation, as skilled managers with a knowledge of risk management data, might reasonably have been expected to know that such contradictory circumstances increase the likelihood of an error occurring in any given activity by a factor of 17.

If we assess that the task of constructing platforms lies at about the mid point on the 0.0005 to 0.75 basic error continuum - say at the 0.005 point - then we can state the expected probability of errors occurring in platform construction at the Department of Conservation was about 3389 in 20,000, which appears to be not too far off the actual rate discovered when the Department inspected all its platforms shortly after Cave Creek.

We have only talked about errors here. Violations have not been discussed because the research community has not yet produced similarly precise statistical data to aid an analysis. However there is sufficient evidence to propose that the incompatible goals generated by the conflict between the requirements of the State Sector Act and those of the Public Finance Act have a probability multiplier effect on error and violation risks in New Zealand public sector agencies, and a measurable multiplier impact on the performance of DoC at Cave Creek. As the responsibility for this legislation lies with parliament, and its enforcement lies with the State Services Commission, then it is reasonable to attribute some portion of the responsibility for the accident with those agencies.

If, as the wording of Mr Hunn's report seems to suggest, this legislation is to be regarded as an immutable part of the operating environment, then the risk multiplier effect ought to be recognised officially and targeted defensive procedures put in place to neutralise the potential catastrophic effects of what appears to be an acceptance that larger than expected error rates are to be tolerated. Needless to add if this surmise is correct then we might predict, with some statistical confidence, that there are more catastrophes likely in the public service, this on the basis of latent pathway failures suggested by the data provided by responses to the Cave Creek tragedy.

4.25. Management practices

In the most favourable of circumstances safe practice needs constant reinforcement. Whereas feedback on productivity and efficiency is always available and directly experienced - even if not explicitly reinforced - feedback on safe practice is not, because the consequences of safe practice is the *absence* of observable consequences and a reduction in probability. This phenomenon requires that safe practice be constantly and actively promoted and regulated. When it is not standards will always slip. They will slip that much faster if there is, in addition, strong competing emphasis on efficient performance and cost saving.

Consider now the impact of a reward system that pays bonuses to individuals who come to believe that the performance of their mission is the achievement of savings, 'doing more with less'

such that latent failure is rendered invisible. On the surface great savings are made, safety is regulated by force of law but in terms of the pathogens of Reason's model, the probability of catastrophe is increased. One of the causes of great discomfort to the British government in the mad cow crisis is that while comprehensive regulations concerning slaughterhouse operations were passed in 1989, absolutely nothing was done to enforce them. Simultaneously British slaughterhouses were put under great cost pressure by the need to meet a whole new range of EC regulations. In such circumstances it is perfectly understandable that companies sought savings in areas where they knew enforcement was not happening.

Prudent and well prepared managers of organisations whose activities involve risk of injury or death to staff, customers and members of the public can be expected to understand the organisational phenomena described here as part of their standard skills set. To the extent that senior management in DoC and the State Services Commission did not recognise and make structural provision for the tension between cost efficiency and safety they added error and violation multipliers to the working environment, and therefore a systems safety professional might have argued that they should have borne part of the responsibility for the event at Cave Creek.

5. THE CURRENT STATE OF THE LAW

There is a view growing amongst jurists that much of the world's legal systems are not adequately aligned with the state of current knowledge about accidents and accident causation. For example:

"It is clear that, in company with legal systems elsewhere, it [New Zealand Law] is seriously deficient, a consequence accentuated by the enactment of the no-fault Accident Compensation legislation without the safeguards contemplated by its authors." (Law Commission, 1999).

However in daily practice the legal system has to work with the law as it is. In this section we review that law and, in the course of doing so, point out where the legal context is at odds with the current state of scientific knowledge as reviewed in the previous section.

5.1. Protection of the Person.

Security of the person is the first right recognised by the New Zealand Bill of Rights Act 1990. The law as a whole must look to its role in preventing harm as its first priority. Providing for punishment and compensation is a secondary goal, and the extent that such legislation is used is an indication of the extent to which the law has failed in its primary goal.

Notwithstanding the primacy of preventing harm, much other legislation does not embody this imperative. For example Mr Hunn's report on Cave Creek and the state sector suggests that prior to Cave Creek, DoC paid attention to the financial accountabilities required by the Public Finance Act ahead of public service requirements under the State Sector Act. In fact they were legally required to do so. The long title of the Public Finance Act says that it is an Act to:

- Provide a framework for parliamentary scrutiny of the Government's management of the Crown's assets and liabilities, including expenditure proposals;
- Establish lines of responsibility for the use of public financial resources; and
- Establish financial management incentives to encourage effective and efficient use of financial resources in government and Crown entities; and
- Safeguard public assets.

This intent seems to directly contradict the primacy of the security of the person as embodied in the New Zealand Bill of Rights Act.

In our 1996 paper on Cave Creek we argued that this created a highly dangerous situation which constitutes an 'Inappropriate Structure' in Reason's General Failure typology. If employees of an organisation are given strong signals that they must constrain expenditure and then seek to achieve maximum productivity with limited resources, there are strong incentives to commit optimising violations as defined in Reason's error types. There were many optimising violations in the events leading to Cave Creek. Mr Hunn's statements about this matter bring to mind a finding of the Canadian Commission's report on the Dryden accident, where it was stated:

The corporate mission statements of Air Canada and Air Ontario both contain words to the effect of the primacy of safety considerations. The evidence disclosed that other corporate concerns, important in their own right, were allowed to intervene and subordinate safety. The difference between the attention and resources expended by Air Canada and Air Ontario on marketing, as compared with safety of operations, must, when held up to their respective mission statements, be described as inadequate and short sighted.

5.2. Criminal Law and 'Corporate Manslaughter'.

There are those who maintain that sufficient protection is provided by criminal law. But the current state of knowledge about systemic failure and accidents has drawn attention to its inadequacy in this regard. For example the Law Commission of England and Wales pointed out in 1996 that English criminal law does not provide adequate sanctions against injuries and death caused by systemic inadequacy. The Lyme Bay drownings, the King's Cross Station fire and the capsizing of the 'Herald of Free Enterprise' were incidents which brought this fact to the fore, and has resulted in recent advances in English legislation.

But it is not only sanctions that are a problem in using criminal law to deal with systemic failure. Standards of proof in criminal law make it extremely difficult to establish systemic failure which, as the previous section on the current state of knowledge demonstrates, can extend over a long chain of failures in space, time and organisational processes.

In particular there is the question of corporate manslaughter.

- In New Zealand manslaughter cannot currently be laid against a company (R. v Murray Wright [1970] NZLR 476. Work by the New Zealand Law Commission addressing this issue in part is currently inactive (As at May 2000).
- In England and Wales criminal prosecution of a company has been possible, but criminal justice standards of proof have meant that there has only ever been one successful prosecution. This issue is currently the subject of legislative amendment in England.
- In the United States a company can be held criminally liable if it can be shown that any employee had the necessary knowledge and intent while acting in the course of employment, but in English law this is only possible in respect of directors.

5.3. The Health and Safety in Employment Act 1992.

Boards of Directors must now ensure their senior management design their organisations and develop their management systems to enable managers and their teams to perform cost-effectively to manage knowledge for safety. Properly applied top-down, national system and enterprise wide, the active and latent failure pathways approach advocated by Reason (1990) provides a practical route to system safety particularly for those industries operating in high risk environments. The major issues for directors, chief executives and management to tackle are discussed in Section 9.

5.4. 'All Practicable Steps'

There are now many especially developed tools that can be used to reduce the risk of latent failures and organisational accidents like Erebus and Cave Creek. These tools can be applied in any enterprise and industry so that the requirements of the Health and Safety in Employment Act 1992 (HSE Act) can be met in a focused and effective way. The HSE Act reformed *'the law relating to the health and safety of employees, and other people at work or affected by the work of other people'*. These tools seem to be covered by the definition in the Act:

"All practicable steps", in relation to achieving any result in any circumstances, means all steps to achieve the result that it is reasonably practicable to take in the circumstances, having regard to -

- (a) The nature and severity of the harm that may be suffered if the result is not achieved; and*
- (b) The current state of knowledge about the likelihood that harm of that nature and severity will be suffered if the result is not achieved; and*
- (c) The current state of knowledge about harm of that nature; and*
- (d) The current state of knowledge about the means available to achieve the result, and about the likely efficacy of each; and*

(e) *The availability and cost of each of those means.*“,

This becomes more meaningful and relevant when considered in the context of the holistic blend of applications available to define the nature of occupational competence and thus enhance organisational effectiveness.

New Zealand has had know-how in the design and application of such tools since 1984 (Hunt, 1984b). We have been well placed to define and apply the current state of knowledge about the means available to achieve the result (safety at work) and even to confront deeper system safety issues since the 1990 publication of ‘Human Error’. Most New Zealand company directors, senior executives and managers however are not aware of this capability. To what degree the maxim *ignorans lex non excusat* applies in such matters now that this material is available may soon be tested.

5.5. Hazards

The Act also defines ‘hazard’:

“Hazard” means an activity, arrangement, circumstance, event, occurrence, phenomenon, process, situation, or substance ... that is an actual or potential cause or source of harm; and hazardous has a corresponding meaning.”

“Significant hazard” means a hazard that is an actual or potential cause or source of -

- (a) *Serious harm; or*
- (b) *Harm (being harm that is more than trivial) the severity of whose effects on any person depend (entirely or among other things) on the extent or frequency of the person’s exposure to the hazard; or*
- (c) *Harm that does not usually occur, or usually is not easily detectable, until a significant time after exposure to the hazard.”*

It is now possible to identify ‘significant hazards, actual or potential’, and work effectively on both active and latent failure pathways to reduce the risk of an enterprise suffering an organisational accident.

The HS&E Act states that death is “*seriously harmful*. Analysis of events, using the tools and knowledge currently available, can identify the situations and events considered to be potentially hazardous and which must be avoided, and which must be resolved successfully because they are ‘critical for safety’. Enterprise employees, clients and customers, simply because they are human, are capable of generating situations and events that present ‘hazardous’ attitudes which need modifying. It appears that the design and development of ‘organisational defences, barriers and safeguards’ (see Section 9) to reduce the risk of latent failures is an imperative for system safety under the Act.

5.6. Management Responsibility

Latent failures surface in any enterprise as a result of fallible decisions made in organisational and managerial areas of accountability, that is, the responsibility for outcomes, the effects of outputs on the environment. If internal and external clients and customers require outcomes rather than outputs, company directors and their executive must go for quality rather than quantity. Quality and Safety are now imperatives in business.

Two decades ago Gilbert (1978) found that:

“For any given accomplishment, a deficiency in performance always has as its immediate cause a deficiency in a behaviour repertory, or in the environment that supports the repertory, or in both. But its ultimate cause will be found in a deficiency of the management system.”

More recently, Maurino et al (1995) advise:

“Management are responsible for establishing the necessary organisational structures and ensuring that appropriate operational policies are in place (Bruggink, 1985). Management are also responsible for ensuring that those policies are effectively translated into action.”

“The necessary organisational structures and appropriate operational policies” originate from the endeavours of directors *directing* rather than *managing*, on a *learning board*.

Kiely (1998) was among those who reviewed the impact of the Health and Safety in Employment Act, 1992. He noted that prosecutions under the Act increased sharply after 1995 as regulatory authorities moved out of the ‘honeymoon’ period of the Act. As part of the same evolutionary process judges began to impose harsher penalties. Over 80% of prosecutions, (1998), were against the employer.

Kieley also noted the increasing habit of awarding part of a fine to the employee who suffered harm, and questioned whether the use of this act to impose a de facto system of exemplary damages, was justified.

Despite the fact that many judges specifically point out the preventative intent of the Act as embodied in section 6 (requiring an employer to take ‘all practicable steps’ to ensure the safety of employees), for example in *Department of Labour v De Spa* [1994] 1 ERNZ 339, there is considerable doubt as to whether the Act is fulfilling this function. The Law Commission has observed that the Health and Safety in Employment Act is an unsatisfactory vehicle for addressing the issue of systemic failures that result in accidents. This, in its view, is primarily because the Act lacks specificity and provides weak sanctions.

5.7. Accident Compensation in New Zealand

New Zealand was an early leader in the field of compensation for work injuries. In 1900, 12 years after Bismarck established the famous "no fault" workers compensation system in Germany, New Zealand passed the Workers' Compensation Act, which endured, with some modifications until 1974. The Act provided injured workers with weekly benefits and, in fatal cases, benefits for dependants. The Act required that employers (other than those exempted because of their size or strength) insure with an authorised insurer of their choosing against liability to pay statutory compensation.

The New Zealand legal system developed on the British common law model. Except for work injuries covered by the Workers' Compensation Act, entitlement to compensation for personal injury required proof of negligence by a tortfeasor.

Embedded in the jurisprudence of personal injury by accident were the concepts of strict and vicarious liability, masters and servants and their many duties to each other, and notions about the role of the law as a conservative force in the economy.

New Zealand's enlightened social conscience and values soon produced the idea of a "no fault" compensation scheme. The "fault" principle came under scrutiny in 1962 when the Government appointed a Committee on Absolute Liability with the terms of reference to:

"report on the desirability of the introduction of some form of absolute liability for deaths, and for bodily injuries, arising out of the use of motor vehicles and to report on the adequacy and justice of the law, insurance practice and legal procedures."

The Committee recommended that at that time "no present change in the law could be recommended", but found that:

"There is a case for an accident insurance scheme which would cover all persons who are injured in any way without negligence on their part, provided the community can afford to bear the cost on an equitable basis." (Paragraph 40, Report of the Committee on Absolute Liability for Motor Vehicle Accidents, Government Printer, New Zealand, 1963).

Following the recommendations of the Committee on Absolute Liability, the Government in 1967 established a Royal Commission of Inquiry into Compensation for Personal Injury in New Zealand under the chairmanship of Mr Justice Woodhouse

The report of that Royal Commission, the famous "Woodhouse Report", proposed an entirely different approach to compensation for persons who had suffered personal injury by accident. The report proposed a "no fault" system based on five basic principles:

- Community responsibility;
- Comprehensive entitlement;
- Complete rehabilitation;

- Real compensation; and
- Administrative efficiency.

After considerable debate and argument before a Select Committee of Parliament, in 1972 the Accident Compensation Act was passed into law by the conservative National Government. That Act established a limited scheme, which provided compensation for, injured earners and the victims of motor vehicle accidents. The rest of the community was left to pursue common law remedies.

Following the election of the Labour Government in October 1972, the Accident Compensation Amendment Act 1973 was passed, establishing a scheme which provided comprehensive entitlement to compensation for all persons (including visitors to the country) who suffered personal injury by accident in New Zealand (and in some cases outside New Zealand). Cover under the scheme applied without proof of "fault", no matter how or where the accident occurred, whether at work, at home, on the roadway, at sport or recreation, or elsewhere. The common law right to sue for damages for personal injury in a New Zealand Court (except in respect of punitive or exemplary damages) was abolished.

The Act had three main purposes:

- To promote safety by preventing accidents;
- To promote the rehabilitation of injured people; and
- To provide compensation for the injured and for the dependants of certain people whose death resulted from injury

As a code, the Act provided the only source of compensation for personal injury suffered in New Zealand. The benefits payable under the Act included:

- Earnings-related compensation (payable from the 7th day after the accident) to the age of 65 years at the rate of 80 percent of normal average weekly pre-accident earnings;
- Hospital and medical (including dental) expenses;
- Rehabilitation costs;
- Transport costs associated with hospital or medical treatment;
- The cost of repairing or replacing natural teeth, artificial aids or appliances, and clothing damaged in the accident;
- A lump sum payment for permanent loss or impairment of bodily function;
- A lump sum payment for pain and mental suffering, including nervous shock and neurosis and loss of enjoyment of life;
- Compensation for pecuniary loss not related to earnings;
- The cost of funeral expenses in fatal cases;
- Lump sums for surviving spouses and children

The scheme came into operation on 1 April 1974 under the administration of an Accident Compensation Commission. There were in fact three schemes established under the 1973 Amending Act. They were:

- The earners scheme, which provided cover for injured "earners" (whether employees or self-employed persons) who were not injured as a result of the use of a motor vehicle - this scheme was funded from levies paid by employers on wages paid to employees, and from levies paid by self-employed persons in relation to their tax-assessable income;
- The motor vehicle accidents scheme, which covered the victims of motor vehicle accidents and was funded from levies paid by the owners of motor vehicles; and
- The supplementary scheme, which covered those who did not have cover under the earners or motor vehicle accidents scheme - this scheme was funded by Government from the consolidated revenue.

The scheme was reviewed in 1979 and the Accident Compensation Commission replaced by the Accident Compensation Corporation in 1980. In 1982 the scheme was amended to change from 'fully funded' to 'pay-as-you-go' and the rate of 'first week' compensation reduced from 100% to 80% of pre-accident earnings. The scheme was further amended in 1982 and in 1986 the Government undertook a substantive review of the scheme.

Following the Officials Committee Report in 1987 the Government asked the New Zealand Law Commission (Chairman Sir Owen Woodhouse) to review the accident compensation scheme.

The Law Commission report was published in May 1988. It proposed some sweeping changes to the scheme designed to remove some of the perceived anomalies between the earnings-related compensation available to accident victims and the means tested welfare benefits payable to those who were incapacitated through sickness or disease. It aimed at simplifying the administration of the scheme and removing some of the inconsistencies, which had been met in applying the concept of "personal injury by accident". It proposed the abolition of lump sums for permanent loss or impairment of bodily function and for pain and mental suffering and loss of enjoyment of life, and advocated their replacement with periodic payments.

The Commissions Report and recommendations were incorporated in the Budget for 1989 and the scheme was once again extended.

Driven by concerns from the Employers Federation and the Business Roundtable to relieve employers of the financial burden of paying for employees' non-work accident claims, and to counter an alleged "blow out" in the cost of the scheme, the National Government, which came to power in October 1990, established a further committee to look into the accident compensation scheme. The Ministerial Working Party on the Accident Compensation Corporation and Incapacity was given terms of reference which were as follows:

(1) Policy goals

The basic goal of the Government was to ensure that, in the event of incapacity, everyone was eligible for an acceptable level of income support and had access to health care services on fair terms.

(2) Objectives

Reforms of the Accident Compensation Corporation and of provisions for incapacity would be directed at redesigning policies and institutions to achieve the following objectives:

- To ensure that, in the event of incapacity, everyone has access to an acceptable level of income support and to health care services;
- To ensure that the cost of providing income support and health care services in the event of incapacity falls fairly among Government, employers, motorists, and individuals;
- To recognise the obligations on the Government that flow from the removal of the right to sue for personal injury by accident;
- To recognise and foster the responsibility to take care of all those (employers, motorists, and individuals) who are in a position to prevent accidents and other causes of incapacity;
- To minimise the cost to society of the system of compensation for incapacity - this may require:
 - (i) A Greater freedom of choice between insurers;
 - (ii) Competition between public and private sector insurers; and
 - (iii) Minimising barriers to competition among insurers and ensuring that they compete on a neutral basis.

The Accident Rehabilitation and Compensation Insurance Bill was introduced into Parliament in November 1991 and passed into law on 1 April 1992.

In December 1998, legislation was passed that introduced a major change to the way in which employers and self-employed people were able to insure against injury at work. The Accident Insurance Act 1998 opened workplace injury insurance to a competitive market. As a consequence, from 1st July 1999 ACC was no longer New Zealand's sole provider of workplace injury insurance and compensation. Under the new Act, employers were required to purchase insurance from a registered commercial insurer including a new State Owned Enterprise insurer, to cover their employee's workplace injuries. ACC would no longer provide workplace or employer cover.

The new scheme was expected to result in more individual responsibility for the prevention of injuries, especially for employers who were well positioned to manage workplace health and safety. It was expected to result in new administration, compliance and transaction costs. However, it was assumed that these costs would be offset by :-

- improved incentives on premium payers to prevent injuries
- more control for employers in managing workplace safety and improving rehabilitation for people with workplace injuries
- the ability for premium payers to choose an insurer who provides the services that best meet their needs
- improved and more flexible service to premium payers and claimants
- increased focus on the needs of claimants and the achievement of rehabilitation outcomes
- more efficient scheme management and accountability

There remained a lively public debate demanding the return of the ability to sue for compensation because the amendments to the Act had, in the view of those seeking reform, reduced the benefits and entitlements to too little to be of assistance and yet the statutory bar to litigation remained. In some cases counsel had succeeded in advancing arguments to the Court that resulted in, in limited circumstances, some litigants gaining compensatory payments for accidents. These results seemed to fuel a public perception that the scheme was no longer fair and repeal of the accident compensation scheme became an election issue and the new Labour Government moved quickly to restore a single state owned insurer and to enhance some benefits.

This section drew on the commentary by D.A.Rennie on Accident Compensation for Brooker & Friend.

5.8. Summary: The Relationship Between the Law in New Zealand and the Current State of Knowledge.

The foregoing sections on the current state of knowledge and the law in New Zealand, suggests to us the following conclusions about the state of affairs that prevails:

- (1) The current state of knowledge provides robust investigative tools, grounded in high quality scientific research which allows the identification of levels of responsibility for unsafe practice which may lie many levels removed from the actual unsafe act, but the law makes it difficult or impossible to hold either the corporate body, or individuals within the corporate body, accountable for their actions (or lack thereof).
- (2) On the other hand the current body of knowledge appears to present strong possibilities for those defending individuals charged with criminal offences because of their own specific unsafe acts.
- (3) Given (1) and (2) there are now an increasing likelihood that nobody will, in the end, be held legally accountable for an organisational accident which causes injury or death.
- (4) To the extent that organisations can be held responsible for accidents under the Health and Safety Act, specifics are weak and the penalties inadequate.
- (5) The possibility of civil action presents one possible remedy, but this is a confused matter in terms of the changing accident compensation environment and, in any event it is primarily a matter, which provides for remedies after the event rather than prevention.
- (6) In any event the law is a sanctions based vehicle, which research has demonstrated to be an unsatisfactory approach to accident prevention. There is little provision in the law for the promotion of safe practice as opposed to the regulation of unsafe practice.
- (7) The Crown is not liable to prosecution for any systemic failure under the Health and Safety in Employment Act

In recent years a number of accidents and incidents in New Zealand have prompted vigorous debate about the siting of responsibility for those accidents. Blame is typically apportioned between those who committed the actions, which directly led to the event, and those whose indirect actions as managers or service providers contributed to what happened. These debates have taken place in the public and political arenas, in various formal or semi-formal inquiry environments, and in the courts. Examples include the Erebus disaster, the Cave Creek Disaster, and the Soundsair crash and more topically the Ansett crash.

Many of the opinions expressed about what constitutes 'responsibility' and where it might lie in these cases have not been made on the basis of the current state of knowledge of the factors involved in human error.

Lack of knowledge and appreciation of human error has also led to an apparent degree of inconsistency between the findings of various judicial and quasi-judicial bodies, and can be reflected in the verdicts of juries.

A goal of this project is to assist in the development of an appropriate jurisprudence, which applies the current state of knowledge of human error to facilitate changes in the health and safety practices of organisations and managers. Current advice to these groups tends to have regard for the traditions of personal accident by injury, vicarious liability, master-servant relationships and the law both established by and around the advent of the Accident Compensation Scheme.

As the accident compensation scheme fell into disrepute as an adequate compensatory scheme there were considerable incentives for injured persons to seek recompense at law. But the law requires the finding of fault and someone to blame and therein lies the paradox that is at the heart of this project. This project suggests that the law and how it understands and deals with human error is not likely to promote safe practices at work or to allow for notions of systemic safety issues in workplaces. In obscuring or impeding these developments the law itself may be a barrier to the creation of safe work systems.

6. CURRENT LAW AND THE CURRENT STATE OF KNOWLEDGE

We now look at examples from recent New Zealand case law and compare them with the insights provided by the current state of knowledge we have reviewed in the foregoing sections.

6.1. Vertical Flight Management v Airwork NZ Ltd.

In *Vertical Flight Management Ltd v Airwork NZ Ltd* (CP 370-95), which concerned liability for a collision between a helicopter and a fixed wing aircraft over Auckland, it was held that “the greater proportion of the responsibility for collision must lie with Airwork for failing to establish and maintain a safe system under which the operations could be conducted.” The pilot of the Airwork aircraft was described specifically as being distracted from his duties (as pilot of the aircraft) by his other obligations to view and report on traffic conditions. In this respect Airwork was held to be both **negligent** and **vicariously liable** for the negligence of the pilot - who was also held to have contributed to the accident.

This judgement is generally in line with the current state of knowledge, but a question remains in our mind as to whether the work obligations laid on the pilot created a situation that was cognitively impossible to deal with. If this were explored, and expert evidence established it as so, then what is the nature of the negligence attributed to the pilot? If it is failing to pay proper attention, then this would have been beyond the cognitive capability of a human being. If it lies in the pilot’s failure to monitor his own workload, then the charge of negligence would appear to require evidence that the pilot knew what constituted unsustainable demands.

6.2. Department of Labour v Buchanan’s Foundry Ltd.

In *Department of Labour v Buchanan’s Foundry Ltd* (CRN 5009023632, 633 and 634, CRN 5009035814 and 815) the defendant was charged with a number offences relating to the failure to comply with the obligations an employer has to ensure the safety of workers, together with one charge of a failure to comply with the obligation to provide training to employees. It was held that **inadvertent failure to take all practicable steps will constitute an offence as long as the failure can be proved**. It was held that there were no clearly established work practices and the fact that the employee breached the duty to ensure his own safety did not constitute a defence. The charge relating to failure to provide training was dismissed.

This ruling seems to be, for the most part, well aligned with the current state of knowledge, but it therefore seems strange that failing to provide training was regarded differently, as robust training is an essential part of any safe system. The absence of clearly established work practices appears to be the key element here. Such a failure leaves the workers with cognitive problems about establishing patterns to use in deciding what to do. This becomes especially a problem if there is an environmental change – for example changes in personnel.

6.3. Department of Labour v De Spa Ltd

In *Department of Labour v. De Spa & Co Ltd.* the respondents were convicted of three breaches of the HS&E Act resulting in death and injury to employees. The Crown appealed against the penalties arguing that they were inadequate. The court held *inter alia* that relevant factors in sentencing in such cases include:

- (a) the degree of culpability;
- (b) the degree of harm resulting;
- (b) the offender's financial circumstances;
- (c) the offender's attitude, including remorse, cooperation and taking remedial action;
- (d) any guilty plea;
- (e) the need for deterrence;
- (f) compensation to the victim;
- (g) the employer's safety record; and
- (h) the facts of the particular case.

The list is a comprehensive summary of the issues of the use of the law in the area of health and safety. In particular it stresses the contradictory purposes that might apply in any particular case. However the only reference to accident prevention is the mention of the need for deterrence. The key question that judges must try to resolve in such cases is the relationship that might exist between the deterrent intent of the penalty and the behaviour of companies as a consequence of knowing the likely penalties. As discussed in Sections 3 and 4 the relationship is, in fact, complex and the cause and effect lines can be ambiguous.

6.4. Department of Labour v Independent Fisheries Ltd CRN 300902671

This case involved a prosecution arising from an employee becoming frostbitten while packing fish in a freezer. In this case lack of training was held to be a critical determinant of guilt on the part of the defendant – even though they had a well-defined safety system. Another contributing factor was held to be that employees did not like wearing protective clothing. Many breaches of the Act involve multiple causes, in this case the systemic failure to train employees about the hazards of the job was held to be decisive. However the reports show that there are similar cases where this is not held to be so. Judges are faced with balancing the relative impact of different causal factors but this must be extremely difficult to do consistently in the absence of an appropriate, current and shared analytical model for doing so.

6.5. Knowles v Griffins Foods Ltd. CRN 4055004540

In this case the employer was convicted of failing to take all practicable steps after an employee was injured when her fingers were caught in unguarded rotating spikes on a machine. Protective spatulae had been fitted but had gone missing. An important aspect of the court's decision was that a defence that the danger could not have been known before an actual accident happened was not tenable. This is a correct decision in terms of the current state of knowledge. It illustrates the difference between proactive and reactive companies as described in our review of current knowledge. Proactive companies seek out hazards, reactive ones respond to events.

6.6. The Department of Labour v Andy Kay A.P. 326/96

One question that the Court of Appeal had to determine was whether a person could be said to have failed to prevent harm from occurring to another person when the incident in question resulted in no actual harm, but only the possibility of it. The court ruled that there did not have to be harm in order for a breach of S.19 (b) of the Act to be proved. However an interesting aspect of this case concerns what did *not* form part of the argument. The case was brought against an individual employee, but we do not know what factors contributed to the negligent behaviour of the employee. For example there is no information one way or the other about the employee's competence to do the job assigned to him.

6.7. The Department of Labour v Central Cranes Ltd; AP 30/96

This is an important case from the point of view of the systemic understandings of health and safety discussed in this report. The District Court dismissed a case against the defendant on the grounds that the breaches of the Act observed by inspectors occurred under the auspices of a competent subcontractor, and that the defendant company was removed from the activities of the site, and that therefore the principal was not liable. The Court of Appeal reversed this decision stating that the principal did indeed have responsibilities to ensure that no harm occurred. This represents an important affirmation of lines of responsibility in a value chain between customers and suppliers. The current state of knowledge as we have described it ascribes latent failure to whole value chains and not just single legal entities within it. The Act itself embeds this understanding by laying obligations on principals to ensure that their subcontractors adhere to the Act.

7. LAW DATABASE AND LIBRARY SEARCH

Scope

- current NZ legislation relation to the legal responsibilities and accountabilities (both civil and criminal) that exist when an error or accident occurs through the actions of individuals performed in the course of their duties as an employee or member of an organisation.
- case law interpreting this legislation, and instructive case law from other relevant jurisdictions
- quasi judicial findings on the topic from such sources such as commissions of inquiry, royal commissions, and investigations carried out by various authorities nationally and internationally.

Contents

7.1 Law Database Summaries

7.2 Other Important Case Summaries

7.3 Law Commission Library Materials

7.4 Cases considered by WEB Research

7.4.1 OSH Library

7.4.2 ACC Library

7.5 Hard copies of case law

7.1. Law Database Summaries

Query: LINX records: commissions of inquiry

Articles

Title Corporate killing
Author(s) WELLS, Celia
Journal New Law Jnl 147(6811) Oct 1997:1467-1468
Subject Corporate criminal liability - Great Britain

Title FAIs - after Lockerbie [FAI : Fatal Accidents Inquiry]
Journal Scots Law Times 19 Jun 1991:225-228

Subject Commissions of inquiry - Scotland

Statutes Fatal Accidents & Sudden Deaths Inquiry (Scotland) Act 1976 (UK)

Texts

Title Report of the Commission of Inquiry into the Abbotsford landslip disaster

Place Wellington

Publisher Government Printer

Date 1980

Corp Author New Zealand. Commission of Inquiry into the Abbotsford Landslip Disaster

Subject DISASTER RELIEF - NEW ZEALAND; ACTS OF GOD - NEW ZEALAND;
PLANNING - NEW ZEALAND; COMMISSIONS OF INQUIRY - NEW ZEALAND

Classification KN181.6.L1 NEW

Pages 195 p

Query: LINX records: air accident

Name Vertical Flight Management Ltd v Airwork (NZ) Ltd

Judge(s) Randerson J

Court HC, Auckland

File number CP 370-95

Judg date 06 Nov 97

Subject AIR & SPACE LAW - aviation - serious mid-air collision between an Aerospatiale helicopter owned by the plaintiff ("Vertical") and a fixed wing Piper aircraft owned by the defendant ("Airwork") - helicopter engaged under contract to NZ Police for purpose of Police operations on a call-out basis - operation known as Eagle operation - Piper aircraft also operated under contract to NZ Police to provide a road traffic patrol service known as Pact, over Auckland city during peak traffic, covering the Auckland urban motorways and interchanges - service also involving pilot reporting to Auckland Police on traffic conditions and the effect of road accidents on traffic flows - Pact owned and operated by Airwork - at time of accident, Vertical having equitable ownership of Eagle - substantial dispute as to whether, at the time of the collision Eagle and its pilot H were under the control of Vertical or Airwork - no dispute that at all material times H was paid wages by Vertical but at all material times H was effectively under the control and direction of Airwork so as to render Airwork vicariously liable for any negligent acts of the pilot - Vertical claiming \$US840,500 being the value of Eagle - 3 causes of action: (1) breach of contract arising from an agreement for sale and purchase between parties entered into in Oct 1991; (2) negligence; (3) bailment - whether Airwork was negligent in a manner which caused or contributed to the loss in failing to establish and maintain a safe system for the Eagle and Pact air operations - whether Airwork was negligent in a manner which caused or contributed to the loss through the actions or omissions of the pilot of Pact - whether pilot of Eagle was negligent in a manner which caused or contributed to the loss - whether Vertical or Airwork was vicariously liable for any negligence of the Eagle pilot - whether the insurance arrangements between the parties afforded any defence to the claim and, in particular, did Vertical agree to indemnify Airwork against the loss - proper quantum of Vertical's loss - whether Airwork was entitled to succeed on its counterclaim against Vertical in any respect - HELD: the

greater proportion of the responsibility for collision must lie with Airwork for failing to establish and maintain a safe system under which the Eagle and Pact operations could be conducted - Airwork had been negligent in failing to establish a safe system for the Pact and Eagle operations - if pilot of Pact had been keeping a proper look out and if he had not been distracted from his duties by his other obligations to view and report on traffic conditions, he should have seen Eagle before commencing left turn which placed him on a converging course with Eagle - Pact pilot negligent in a manner which contributed to the accident - in view of the fact Eagle was climbing into airspace over Auckland City which was known to be regularly occupied by Pact at the time of the day in question, there was a particular obligation on the pilot of Eagle to ensure that the airspace was clear either by establishing communication with Pact or by keeping a particularly careful look out - pilot of Eagle also negligent - Airwork had entire responsibility for accident resulting from negligent failure to establish safe systems and vicariously through the acts or omissions of each of the pilots - no express exclusion of the right to sue Airwork for recovery of loss nor any indemnity from Ver6ytical in relation to loss caused by the negligence of Airwork - judgment in the amount of US\$829,250 entered in favour of the plaintiff

NEGLIGENCE

VICARIOUS LIABILITY

Statutes Civil Aviation Act 1990 s2, s6, s12, s12(1), s12(2), s12(3), s12(4), s12(4)(a), s12(4)(b), s12(4)(c), s13, s13(a), s13(b), s13(c), s43, s44 - Civil Aviation Regulations 1953 reg2, reg38, reg38(3)(b), reg88, reg89, reg131, reg136, reg136(4), reg141

Cases cited Steel Structures Ltd v Rangitikei County & Anor [1974] 2 NZLR 306; Mersey Docks & Harbour Board v Coggins & Griffith (Liverpool) Ltd [1947] AC 1; Canada Steamship Lines Ltd v R [1952] AC 192; Producer Meats (North Island) Ltd v Thomas Borthwick & Sons (Australia) Ltd [1964] NZLR 700; Marlborough Properties Ltd v Marlborough Fibreglass Ltd [1981] 1 NZLR 464 ; Mark Rowlands Ltd v Berni Inns Ltd (1985) 3 All ER 473 ; Leisure Centre Ltd v Babytown Ltd [1984] 1 NZLR 318

Pages 37 p

Name New Zealand Airline Pilots Association Ltd v Attorney-General (AG) & Ors

Judge(s) Richardson P, Henry, Thomas, Keith & Blanchard JJ

Court CA

File number CA 300-96, CA 301-96

Judg date 16 Jun 97

Subject AIR & SPACE LAW - plane crash - right to and use of black box - crash of Ansett de Havilland DHC-8 twin engine aircraft into a hillside 16kms east of Palmerston North in June 1995 - police entitlement to obtain by search warrant the cockpit voice recorder recovered from crash site; transcript taken from voice recorder and digital flight data recorder - HCJ finding that a judicial officer had power to issue search warrant but could not exercise it without regard both to certain annex to Chicago Convention on International Civil Aviation and public interest immunity - appeal and cross appeal - challenge to proposal by Transport Accident Investigation Commission (TAIC) to use extracts of transcript in an appendix to report prepared following investigation into crash - A-G intervening in proceedings and giving undertaking to maintain confidentiality in relation to recording and transcript - HELD: power to issue search warrant existed and was not

confined by Convention or by public interest immunity - TAIC had acted within powers conferred on it by the Transport Accident Investigation Commission Act 1990 and without any breach to Convention

Statutes Air Navigation Act 1931 s3, s4, s6, s10 - Aviation Crimes Act 1972 - Carriage by Air Act 1967 - Civil Aviation Act 1948 s8 - Civil Aviation Act 1964 s19, s29(1)(a) - Civil Aviation Act 1990 - Civil Aviation (Investigation of Accidents) Regulations 1953 reg20, reg21A - Civil Aviation (Accident Investigation) Regulations 1978 reg23, reg24(1), reg24(2), reg24(3) - Civil Aviation Rules 1990 - Evidence Amendment Act (No 2) 1980 s35 - International Air Services Licensing Act 1946 - Radio communications Act 1989 - Summary Proceedings Act 1957 s198(1)(a), s198(1)(b), s198(1)(c), s198(5), s198(6) - Transport Accident Investigation Commission Act 1990 s4, s4(2A), s8(2)(a), s8(2)(b), s8(2)(c), s8(2)(f), s9, s10, s14(1), s14(2), s14(3)(a), s14(3)(b), s14(3)(c), s14(4), s14(5), s14(6), s33(1), s33(2)(a), s36(1)(a), s100(1)

Cases cited Attorney-General for Canada v Attorney-General for Ontario [1937] AC 326; Bonner v Karamea Shipping Co Ltd [1973] 2 NZLR 374; Rajan v Minister of Immigration [1996] 3 NZLR 543; Gross v Boda [1995] 1 NZLR 569; Governor of Pitcairn v Sutton [1995] 1 NZLR 426 ; New Zealand Maori Council v Attorney-General (AG) [1987] 1 NZLR 641 ; Commissioner of Inland Revenue (CIR) v JFP Energy Inc [1990] 3 NZLR 536 ; Television New Zealand v Attorney-General (AG) [1995] 2 NZLR 641 ; Brightwell v Accident Compensation Corporation (ACC) [1985] 1 NZLR 132 ; R v Chief Constable, ex parte Wiley [1985] 1 AC 274 ; Fletcher Timber Ltd v Attorney-General (AG) [1984] 1 NZLR 290 ; Whale Watch Kaikoura Ltd v Transport Accident Investigation Commission (CA 97-97, 12 May 1997)

Pages 48 p

Name Department of Labour v Buchanan's Foundry Ltd

Judge(s) Judge TM Abbott

Court DC, Christchurch

File number CRN 5009023632, CRN 5009023633, CRN 5009023634, CRN 5009035814, CRN 6009035815

Judg date 28 Feb 97

Subject EMPLOYMENT LAW - charges relating to failure by employer to comply with obligation to ensure safety of workers - failure to comply with obligation to provide training to employees - accidents at defendant company's foundry - fire causing injury - machinery accident causing injury - inadvertent failure to take all practicable steps will constitute an offence as long as failure can be proved - absence of fault as a defence - held - (1) finding charges relating to five proved - no clearly established work practice - obligations imposed by the charges were distinct - (2) in relation to machinery accident employee breached duty to ensure own safety - does not however provide employer with a defence - is merely relevant for mitigation - finding charge relating to failure to take all practicable steps proved - charge of failing to train employee sufficiently dismissed

Words cons/def "all practicable steps" ; "in the circumstances" ; "hazard"

Statutes Health and Safety in Employment Act 1992 s2, s6, s12, s19, s49, s50, s53 - Quarries Act 1944 s16(1) - Summary Proceedings Act 1957 s67(8)

Cases cited Department of Labour v United Fisheries Ltd (DC, Christchurch, CRN 5009040301, 10 February 1997); Civil Aviation Department v MacKenzie [1983] NZLR 78; Akehurst v Inspector of Quarries [1964] NZLR 621; Chugg v Pacific Dunlop Ltd (1990) 64 ALJR 599; Buchanan's Foundry Ltd v Department of Labour (HC, Christchurch, AP 48-96, 7 July 1996, Hansen J) ; Edwards v National Coal Board [1949] 1 KB 704 ; Department of Labour v McVicar Timber Group Ltd (DC, Blenheim, CRN 3006005655, 6 October 1993, Judge Keane) ; Department of Labour v Alexandra Holdings Ltd (DC, Otahuhu, CRN 3048020814) ; Department of Labour v Ansett New Zealand Air Freight Ltd (DC, Otahuhu, CRN 5048031426, 2 February 1996) ; Canterbury Concrete Cutting (NZ) Ltd v Department of Labour (HC, Christchurch, AP 245-94, 13 February 1995, Williamson J) ; Department of Labour v Talleys Fisheries Ltd (DC, Blenheim, CRN 3006005658, 22 February 1994, Judge Gaskell)

Pages 33 p

Name New Zealand Airline Pilots' Association Incorporated v Transport Accident Investigation Commission & Ors

Judge(s) McGechan J

Court HC, Wellington

File number CP 180-96

Judg date 23 Jul 96

Subject INJUNCTION - successful application for interim order prohibiting annexation of edited transcript of cockpit voice recording to accident report - necessary to preserve appellant's position pending substantive hearing - publication would render substantive hearing pointless - wide discretion - appellants have arguable, although not strong case on merits - adequate report can be published without transcript - utilisation issue of great sensitivity - not available as of right - issues of privacy and potential criminal proceedings - order granted, but subject to re-examination if undue delay in prosecuting substantive hearing - file closed except with leave

AIR & SPACE LAW

Cases cited Carlton & United Breweries v Minister of Customs [1986] 1 NZLR 423

Pages 6 p

Name Lang v Eagle Airways Ltd

Judge(s) McKay, Blanchard & Doogue JJ

Court CA

File number CA 36-95

Judg date 17 Jun 96

Reported [1996] 1 ERNZ 575

Subject EMPLOYMENT LAW - personal grievance - unjustified dismissal - Employment Contracts Act 1991 - appellant a pilot with Eagle Airways - appellant involved with racehorses and as a result of 2 significant equestrian accidents taking time off work - appellant having condition diagnosed as "sinus barotrauma" also requiring time off work - meeting requested with appellant to discuss amount of leave she was taking for sickness and accident - request by Managing Director that appellant record her commitment to horseracing and time spent on it - medical certificate requested for all absences - Eagle Airways discussing with appellant perceived

deterioration in flying standards - appellant experiencing a severe headache while flying and feeling sick and dizzy - approx 3 weeks later appellant experiencing a serious headache accompanied by migraine symptoms - designated medical officer advising appellant to cease flying immediately - appellant given medical certificate stating she was fit for ground duties only - for the first time appellant shown letter from neurologist indicating she was suffering from migrainous condition (letter written 2 years before) - appellant informing Managing Director of events and that she might be grounded for up to 12 months - pilot's licence "restricted to flying with safety pilot" - concern expressed by Eagle Airways at appellants non disclosure in response to specific questions on various forms over the years concerning "severe headaches/migraine" - letter by appellant's specialist explaining that concerns based on misleading impression that appellant aware of migraine problem when at time symptoms diagnosed as due to sinusitis - Managing Director in evidence stating that employment terminated inter alia on basis that he could not rely on appellant accurately or honestly disclosing commitment to horseracing - no explicit warning that employment might be terminated - reasons given for termination in letter giving notice of termination: (1) unacceptable attendance records and withholding of problems from respondent; (2) record of absences likely to continue as a result of migraine condition; (3) safety pilot requirements of Air Transport Division less than clear - no references in letter to appellant's involvement with racehorses - Civil Aviation Authority Medical Unit accepting appellant's explanations concerning her medical history - further discussion between parties regarding withdrawal of notice of termination - employment duly terminated - Employment Tribunal finding reasons given not sufficient to justify dismissal - Employment Court Judge concluding Tribunal had applied incorrect approach to essential issues - whether view that decision to dismiss was one which a reasonable and fair employer could come to, as at time when it became effective, open to Employment Court on evidence before it - held: appellant's employment record abysmal - conditions of employment entitled appellant to sick pay for generous periods. but it did not follow that employer was bound to continue to employ pilot who consistently needed to use her sick leave to such an extent - most of sick leave, however, related to headaches and other symptoms - suggestion that appellant had deliberately withheld existence of medical problem, untrue - what an employee did in spare time of no concern to employer, unless it interfered with performance of job - 3 absences involving horses not seen as justifying dismissal at time - if company could reasonably hold belief that licence endorsement would require a 3rd crew member to fly with appellant and co-pilot then such a belief would have justified dismissal - Employment Court Judge entitled on evidence to reach conclusion that such a belief reasonably held - if appeal had been on fact as well as law, CA would have hesitated before reaching different view from Tribunal - as appeal limited to question of law, CA could only intervene if satisfied no evidence on which Judge's findings could be supported - CA not so satisfied - no procedural unfairness - appeal dismissed

Statutes Employment Contracts Act 1991 s135

Cases cited Edwards (Inspector of Taxes) v Bairstow [1956] AC 14; Ogilvy & Mather (New Zealand) Ltd v Turner (CA 16-95, 19 December 1995); Airline Stewards & Hostesses IUW v Air New Zealand [1990] 3 NZLR 549; Stacey v Babcock Power Ltd [1986] ICR 221

Title New Zealand royal commissions, commissions and committees of inquiry, 1864-1981 : a checklist / compiled by Evelyn Robertson and Peter H Hughes

Author(s) Robertson, Evelyn; Hughes, Peter H

Place Wellington

Publisher New Zealand Library Associations

Date 1982

Subject ROYAL COMMISSIONS - NEW ZEALAND; COMMISSIONS OF INQUIRY - NEW ZEALAND; COMMITTEES OF INQUIRY - NEW ZEALAND

Classification KM238.L1 ROB

Pages 30 p

Title Royal commissions and boards of inquiry : some legal and procedural aspects /
by Leonard Arthur Hallett

Author(s) Hallett, Leonard Arthur

Place Sydney

Publisher Law Book Co

Date 1982

Series Monash studies in law

Subject ROYAL COMMISSIONS; COMMISSIONS OF INQUIRY

Classification KM238.K1 HAL

Pages 368 p

Title Brooker's aviation law / author, Philip Evans ; contributing author, Leslie Brown ; publishing editor, Alison Le Roux

Author(s) Evans, Philip; Brown, Leslie; Le Roux, Alison

Place Wellington

Publisher Brooker's

Date 1996-

Subject AIR LAW - NEW ZEALAND

Statutes Civil Aviation Act 1990 ; Civil Aviation Regulations 1953 ; Civil Aviation Charges Regulations (No 2) 1991 ; Civil Aviation (Safety) Levies Order 1995 ; Airport Authorities Act 1966 ; Civil Aviation (Security) Regulations 1989 ; Transport Accident Investigation Commission Act 1990 ; Aviation Crimes Act 1972 ; Crimes (Internationally Protected Persons and Hostages) Act 1980 ; Carriage by Air Act 1967 ; International Air Services Licensing Act 1947

Classification KN327.L1 EVA

Pages 1 v (loose-leaf)

ISBN 0864722192

Query: Linx records: public safety

Name Director of Civil Aviation v Planning Tribunal & Ors

Judge(s) Ellis J

Court HC, Wellington

File number CP 128-95

Judg date 27 Jun 97

Reported [1997] NZRMA 513, [1997] 3 NZLR 335

Note Synopsis: (1997) 2 NZED 534

Subject ADMINISTRATIVE LAW - application for judicial review of Planning Tribunal decision to grant a resource consent to Glacier Helicopters to run a heliport - whether Tribunal or Council or Director of Civil Aviation makes final decision on matters of air safety - Civil Aviation Act s72B, s72I - Resource Management Act s104 - two statutes covering the same subject matter - no formal declaration as public interest matter with nothing now hanging on it - sees no conflict in the two provisions

RESOURCE MANAGEMENT

Statutes Civil Aviation Act 1990 s72B, s72I - Resource Management Act 1991 s104

Cases cited Stewart v Grey County Council [1978] NZLR 577; Electoral Commission v Cameron [1997] 2 NZLR 421 (CA), (1997) 10 PRNZ 440 (CA), [1997] NZAR 450 (CA)

Query Briefcase: public safety

NAME: DIRECTOR OF CIVIL AVIATION v PLANNING TRIBUNAL

YEAR: 1997

DATE: 27 Jun 97

COURT: HC Wellington

JUDGE: Ellis J

FILE NO: CP128/95

PAGES: 11

REPORT: [1997] NZRMA 513

[1997] 3 NZLR 335

NOTED: [1997] BCL 753, 794

20 TCL 31/10

DESCRIPTION: Resource management

Unsuccessful application for judicial review of decision of Planning Tribunal ("Tribunal") on basis that Director of Civil Aviation and not Council or Tribunal be responsible for matters of air safety; McKenzie DC granted resource consent to establish, operate heliport on shores of Lake Pukaki; operator of aerodrome less than five kilometres away appealed to Tribunal; decision of Tribunal not to grant resource consent to establishment of heliport; air safety issues; Director of Air Safety's view that heliport permitted subject to conditions; declaration sought as to who decided matters of air safety; consent authority; Director's determination could not be undermined by the Tribunal; relationship between roles of Director of Civil Aviation and Planning Tribunal; no formal declaration made; Director's function to set minimum acceptable safety standards; Tribunal might require higher degree of safety than Director; contrary to public interest that prima facie Director's standard should bind Council or Tribunal; where two statutes conflict, strive to give full effect to each; where statutes conflict, special statute to prevail over general

STATUTES: Civil Aviation Act 1990 s14, s72B, s72I

Resource Management Act 1991 s2, s3, s5, s104(1)(a)

REGULATIONS: Civil Aviation Rules 1993 R157

CASES CITED: Electoral Comm v Cameron [1997] 2 NZLR 421

Stewart v Grey CC [1978] 2 NZLR 577

NAME: AUCKLAND REGIONAL COUNCIL v AUCKLAND CITY COUNCIL

YEAR: 1997

DATE: 4 Feb 97

COURT: Environment Court

JUDGE: Judge Sheppard, P A Catchpole, I C Kerr

FILE NO: A10/97

PAGES: 18

REPORT: (1997) 3 ELRNZ 54

[1997] NZRMA 205

NOTED: NZCLD (5th) 1303

(1997) 2 BRMB 46

DESCRIPTION: Resource management

ARC successfully sought amendments to a rule of the Auckland City Council's proposed district plan which classifies activities in Business 5 and 6 zones as permitted, controlled and discretionary activities; ARC sought reclassification of permitted activities which are likely to be adversely affected by discharges to air from other activities in the vicinity as controlled activities or discretionary activities; aim to subject certain sensitive activities to resource consent approval to protect environment where heavy industry can function effectively and public health/safety not be compromised by inappropriate location of sensitive uses; held, these kinds of provisions should be in district plan; ACC to amend district plan accordingly; "reverse sensitivity"; rejected ACC argument that creators of adverse effects should be required to internalise them, not be protected from the consequence of their effect on others; held, requiring resource consent approval for sensitive land uses allows assessment of environments effects on a proposal and its users safety; accords with integrated management; public safety criteria appropriate; provision of emergency contingency plan for sensitive activity as well as those required by producer of adverse effect

STATUTES: Resource Management Act 1991 s5(2)(c), s17, s30(1)(f), s31, s31(a), s31(b), s76(3), s104(1), s104(1)(a), s274(1), s291(1)(b), s293(1), s293(2), s316(2), s319(2), Part II, Schedule", "Statutes">First Schedule cl15(2)

CASES CITED: Aratiki Honey v Rotorua District Council (1984) 10 NZTPA 180

Himatangi Farms v Manawatu District Council W037/91

McQueen v Waikato District Council A045/94

Nugent Consultants v Auckland City Council [1996] NZRMA 481; 2 ELRNZ 254

COROMANDEL PENINSULA WATCHDOG INC v HAURAKI DISTRICT COUNCIL

YEAR: 1996

DATE: 19 Dec 96

COURT: HC Hamilton

JUDGE: Hammond J

FILE NO: M301/96

PAGES: 34

REPORT: [1997] 1 NZLR 557

NOTED: [1997] BCL 140

20 TCL 9/5

[1997] BRM Gazette 53

DESCRIPTION: Environment & natural resources

Unsuccessful application by environmental group for interim relief against goldmining company; objection to building consent to raise crest of tailings dam at mine; alleged risk of environmental or direct physical danger to persons, property; dam was "building" under Building Act; built on unstable ground; alleged risk of slippage; works in breach of mining licence; remedial work; where public safety concerned, threshold test for use of Judicature Amendment Act 1972 s8 should not be set unduly high; rejected allegation that building permit issued on an error of law; little weight to allegation of legitimate expectation that any increase in tailings dam above set height should be subject of review under Mining Act s103(d); expert evidence dismissing public safety concerns; no present catastrophic risk; balance of convenience favoured mining company; overall public interest; threatened injury to C outweighed threatened harm of stop work order; costs to follow the event

STATUTES: Judicature Amendment Act 1972 s8

Building Act 1991 s35, s36, s36(1), s36(1)(c), s36(2), s70, s81

Mining Act 1971 s103(D)

CASES CITED: A-G for Hong Kong v Reid [1994] 1 NZLR 1

Carlton & United Breweries Ltd v Minister of Customs [1986] 1 NZLR 423 considered

Esekielu v A-G (1993) 6 PRNZ 309 considered

Klissers Farmhouse Bakeries Ltd v Harvest Bakeries Ltd [1985] 2 NZLR 129 considered

R v CIR, ex p Unilever [1996] STC 681

R v Secretary of State for Transport, ex p Richmond upon Thames London Borough Council [1994] 1 All ER 577

TEXTS CITED: McGechan on Procedure

NAME: INTERNATIONAL HELIPARTS NZ LTD v DIRECTOR OF CIVIL AVIATION

YEAR: 1996

DATE: 18 Oct 96

COURT: HC Wellington

JUDGE: Gendall J

FILE NO: CP269/96

PAGES: 14

REPORT: [1997] 1 NZLR 230

NOTED: [1996] BCL 1250

19 TCL 48/5

NZCLD (5th) 1273, 1186

DESCRIPTION: Administrative law

Partly successful application for interim relief; judicial review; suspension of Civil Aviation Certificate of Approval to supplier of helicopter parts in NZ; subsequent to fatal helicopter crash in 1995; investigation into possible supply of unapproved parts; defective helicopter parts; decision to revoke Certificate of Approval, issue Air Worthiness Directives advising aviation industry of helicopter parts having incorrect, suspect supporting documentation; serious consequences of revocation; held, test for obtaining interim relief under Judicature Amendment Act is whether the relief is necessary to preserve position; not necessarily appropriate to use balance of convenience; status quo of suspension to be maintained until substantive hearing determined; public safety interests required suspension to continue; public interest in safety also

prevailed as far as issue of Air Worthiness Directives concerned; need to know; declined to prevent issue of directives

STATUTES: Judicature Amendment Act 1972 s8

Civil Aviation Act 1990 s11, s17(1)(a), s17(1)(b), s17(3), s17(4), s17(7), s18, s19(5)

REGULATIONS: Civil Aviation Regulations 1953 (SR 1953/108) reg176

CASES CITED: Fitzgerald v Commission of Inquiry into Marginal Lands Board [1980] 2 NZLR 368 followed

Carlton & United Breweries v Minister of Customs [1986] 1 NZLR 423 followed

Nolan v McIntyre (1986) 6 NZAR 129 followed

**NAME: KAWARAU RAFT EXPEDITIONS LTD v SUPERINTENDENT OF
MERCANTILE MARINE**

YEAR: 1996

DATE: 9 Sep 96

COURT: HC Invercargill

JUDGE: Panckhurst J

FILE NO: AP10/96, AP11/96, AP12/96

PAGES: 23

NOTED: [1996] BCL 1120

19 TCL 43/10

NZCLD (5th) 1040

DESCRIPTION: Criminal law

Unsuccessful appeals against conviction; reckless navigation, operation of craft in manner "likely to cause danger to the public"; Shotover River white water rafting accident; tourist drowned; appeals by rafting company, its director and raft trip leader; river running high; inexperienced people on board; failure to scout rapid; no special safety measures taken; director's decision to raft; error of judgment amounting to negligence; he was responsible for dangerous navigation, operation; actions imputed to company; raft guide had final responsibility; assumed to have given informed consent; the danger must be reasonable in the circumstances on an objective test; went ahead knowing other operators had refused to raft river; vicarious liability; [see] Laws NZ Negligence paras 4-7

WORDS: "likely to cause danger to the public"

"responsible"

STATUTES: Crimes Act 1961 s145

Shipping & Seamen Act 1952 s290

Transport Act 1962

CASES CITED: R v Turner (1994) 13 CRNZ 142 applied

**NAME: DEPARTMENT OF LABOUR v GLENHOUSE SERVICE STATION
(1975) LTD**

YEAR: 1994

DATE: 12 Aug 94

COURT: DC Dunedin

JUDGE: Judge Everitt
FILE NO: CRN4012004953, CRN4012004954
REPORT: (1994) 4 NZELC (digest) 98,300
NOTED: [1994] ELB 128
DESCRIPTION: Health & safety
Successful prosecutions against GSS for breaches of HSE Act; failure to take all practicable steps to ensure safety of persons on the premises and that employee's inaction did not harm another person; farmers, along with GSS employee changing tractor tyre; rim hammered as tyre inflated; explosion causing the father serious injury; hospitalised; held, duty of employer to maintain a safe working environment; duty extended to members of the public; requirement to inspect premises and identify potential hazards, work practices; a cage should have been used, as advised by DoL; fine of \$5,000 against GSS
STATUTES: Health & Safety in Employment Act 1992

NAME: AIR NEW ZEALAND LTD v SAMU

YEAR: 1994

DATE: 21 Feb 94

COURT: EC Auckland

JUDGE: Judge Finnigan

FILE NO: AEC1/94

REPORT: [1994] 1 ERNZ 93

NOTED: NZCLD (3rd) E-181

[1995] ELB 64

[1994] ELB 43

DESCRIPTION: Employment law

Dismissal; failure of employee to meet prescribed safety standards; held, no disparity of treatment; safety prevails over consistency test; public safety involved as respondent was an airline cabin crew member; reinstatement inappropriate where failure to pass safety exams; reinstatement ordered subject to provisos outside ET jurisdiction

STATUTES: Employment Contracts Act 1991 s95(5)(b)

Briefcase: Employment Law Case Tranz Rail v DOL

NAME: TRANZ RAIL LTD v DEPARTMENT OF LABOUR

Alt. sp. TRANZRAIL

YEAR: 1997

DATE: 13 Jun 97

COURT: HC Wellington

JUDGE: Ellis J

FILE NO: AP6/97

PAGES: 17

REPORT: [1997] ERNZ 316

NOTED: [1997] BCL 720

20 TCL 30/7

[1997] ELB 109

NZCLD (5th) 1738

DESCRIPTION: Employment law

Health and safety; unsuccessful appeal against conviction; failing to take all practicable steps to ensure employee safety; employee killed in rail shunting accident; rejected argument that Court lacked jurisdiction as Tranz Rail had complied with provisions of Transport Services Licensing (No 3) Act 1992, code for railway services; existing railway operator had to comply with Health and Safety in Employment Act 1992; background to accident; management decision to reduce crew size; prohibited loose shunting, but practice continued; should have had better supervision, further instruction, enforcement of prohibition of hazardous practice; not enough done; successful appeal against \$30,000 fine; took substantial steps, but not all practicable steps; made ex gratia payment of \$19,000 to deceased's family; fine reduced to \$15,000; \$10,000 of that to be paid to family

STATUTES: Health & Safety in Employment Act 1992 s4, s5, s6, s6H, s9, s50

Transport Services Licensing Amendment Act (No 3) 1992

CASES CITED: Dept of Labour v De Spa & Co Ltd [1994] 1 ERNZ 339

Dept of Labour v De Spa & Co Ltd, DC Christchurch CRN6009032433-34 Judge Abbott 29 Jan 1997

LINX records: work accident (note overlap with air accident)

Name Dunlop Industrial v Accident Rehabilitation & Compensation Insurance Corporation (ARCIC)

Judge(s) Judge Ongley

Court DC, Wellington

File number Decision No 112-97, DCA 295-95

Judg date 06 Jun 97

Subject ACCIDENT COMPENSATION - gradual process work injury - workplace computer work and desk position - similar condition in previous employment - leisure activities - aerobics, tramping, netball and member of gymnasium - appellant employer not accepting claimant's condition was caused by her employment particularly because of the lack of any complaint, the absence of any obviously attributable work activities, and the difficulty in linking her symptoms with a work activity to the exclusion of non-work activities - appeal dismissed

Statutes Accident Rehabilitation & Compensation Insurance Act 1992 s7(1)(a), s7(1)(b), s7(1)(c), s91

Pages 6 p

Name Tracey Manufacturing Co Ltd (Pilkington) v Accident Rehabilitation & Compensation Insurance Corporation (ARCIC)

Judge(s) Judge Middleton

Court DC, Hamilton

File number Decision No 52-97, DCA 208-96

Judg date 14 Apr 97

Subject ACCIDENT COMPENSATION - work injury - OOS - appeal from decision of review officer and respondent which found that the onset of carpal tunnel syndrome suffered by

appellant's employee constituted a work injury under s7 Accident Rehabilitation & Compensation Insurance Act 1992 - work task carried out by the worker "sewing on pocket flaps and buttoning jackets" - medical reports indicating worker's problems had probably been "unmasked" by her employment - work exacerbating a pre-existing condition - eggshell skull principle - appellant concerned worker provided false information as to previous condition - HELD: while the worker's employment with the appellant was short lived and she had been employed on the basis of her statement that she did not suffer carpal tunnel the medical evidence established that the working conditions certainly contributed to her condition - worker's explanation that while she had previously suffered from aching wrists she was not aware nor had she been told that that was caused by carpal tunnel syndrome, accepted - appeal dismissed

Statutes Accident Rehabilitation & Compensation Insurance Act 1992 s7, s7(1)(c), s7(6), s7(6)(a), s7(6)(b), s10, s91

Cases cited Innes v Accident Rehabilitation & Compensation Insurance Corporation (ARCIC) (DC, Dunedin, Decision No 20-97, DCA 214-96, 13 February 1997, Judge Middleton); Tui Milk Products v Accident Rehabilitation & Compensation Insurance Corporation (ARCIC) (DC, Wellington, Decision No 18-95, DCA 13-94, 27 February 1995, Judge Middleton)

Pages 4 p

Name Caldwell v Croft Timber Co Ltd

Judge(s) Paterson J

Court HC, Whangarei

File number CP 44-95

Judg date 26 Mar 97

Reported (1997) 1 BACR 367, [1997] ERNZ 136

Subject DAMAGES - exemplary damages - effect of Accident Rehabilitation & Compensation Insurance Act 1992 on ability to claim exemplary damages - C having arm amputated at his work place as a result of an accident with a square pile saw - C claiming exemplary damages of \$500,000 for: (1) negligence; (2) breach of statutory obligations under the Health and Safety in Employment Act 1992; (3) breach of fiduciary duty - whether exclusive jurisdiction provisions of Employment Contracts Act 1991 put plaintiff's claim outside the jurisdiction of the High Court - whether open to Court to award exemplary damages to plaintiff after defendant had been prosecuted and convicted under the criminal provisions of the law - double jeopardy - S v G considered - New Zealand Bill of Rights Act 1990 s26 - fact plaintiff had cover under Accident Compensation legislation for personal injury - whether causes of action as pleaded were "good" causes of action - degree of intention to be proved against defendant - whether contributory negligence proved against the plaintiff precluded an award of exemplary damages or resulted in apportionment of damages - how apportionment to be assessed - HELD: HC did have jurisdiction in a claim brought by an employee and based on tort of negligence and tort of breach of statutory duty - notwithstanding obiter comments in S v G no principle which prevented exemplary damages being awarded after the defendant had been convicted of an offence under Health and Safety in Employment Act - Accident Rehabilitation & Compensation Insurance Act 1992 did not prevent a claim by an employee for exemplary damages based on either negligence or breach of statutory duty - fiduciary duty claim superfluous - carelessness alone not a sufficient basis for exemplary damages - intention to cause harm not a necessary element but lack of

intention a relevant factor in determining whether exemplary damages should be awarded - test in case of negligence whether level of negligence so high that it amounted to an outrageous and flagrant disregard for plaintiff's safety meriting condemnation and punishment - actions of plaintiff were factors to be taken into account in determining whether defendant's conduct had been outrageous and flagrant - no fixed formula should be adopted to determine what if any reduction to proposed quantum of exemplary damages should be made for the conduct of the plaintiff

EMPLOYMENT LAW

ACCIDENT COMPENSATION

Statutes Accident Rehabilitation & Compensation Insurance Act 1992 s14(1) - Crimes Act 1961 s9, s405 - Criminal Justice Act 1985 s22, s24(f), s28(4) - Employment Contracts Act 1991 s3(1), s13, s14, s73 - Health & Safety in Employment Act 1992 s5, s6(c), s7, s8, s9, s10 - High Court Rules R418 - New Zealand Bill of Rights Act 1990 s26(1), s26(2)

Cases cited Northern Local Government Officers Union v Auckland City Inc [1991] 1 ERNZ 1109; Hurford v International Insurance Brokers Ltd [1992] 2 ERNZ 449; McHerron v Ceramco Corporation Ltd [1994] 2 ERNZ 586; Conference of the Methodist Church of New Zealand v Gray [1996] 2 NZLR 554; Medic Corporation Ltd v Barrett [1992] 3 ERNZ 523 ; Smith v Charles Baker & Sons [1891] AC 325 ; Matthews v Kuwait Bechtel Coporation [1959] 2 QB 57, [1959] 2 All ER 345 ; Lister v Romford Ice & Cold Storage Co Ltd [1957] AC 555, [1957] All ER 125 ; Archer v Brown [1984] 2 All ER 267 ; S v G [1995] 3 NZLR 681, (1995) 8 PRNZ 465, (1995) 2 HRNZ 11 ; O v U (1996) 1 BACR 240, (1996) 14 CRNZ 76 ; Quensell v Immigration Department (HC, Rotorua, AP 59-91, 21 September 1992, Doogue J) ; Simpson v Attorney-General (AG) [1994] 3 NZLR 667 (CA) ; Papadatos v Sutherland (1988) 40 DLR (4th) 235 ; Glendale v Drozdik (1993) 77 BCLR (2d) 106 (CA) ; Herbert v Misuga (1994) 3 WWR 457 ; McLaren Transport Ltd v Somerville [1996] 3 NZLR 424 ; Donselaar v Donselaar [1982] 1 NZLR 97 ; McKenzie v Attorney-General (AG) [1992] 2 NZLR 14 ; Green v Matheson [1989] 3 NZLR 564 ; Auckland City Council v Blundell [1986] 1 NZLR 732 ; Chase, Re [1989] 1 NZLR 325 ; Lonrho Ltd v Shell Petroleum Co Ltd (No 2) [1982] AC 173 ; Tak & Co Inc v AEL Corporation Ltd (1995) 5 NZBLC 103,887 ; Telecom Corporation of NZ Ltd v Business Associates Ltd (CA 7-93, CA 41-93, 23 June 1993) ; Cook v Evatt (No 2) [1992] 1 NLZR 676 ; Aquaculture Corporation v NZ Green Mussel Co Ltd (No 2) (1986) 1 NZIPR 667 ; G v G (1996) 15 FRNZ 22, (1997) NZFLR 49

Name: **Attorney General v Transport Accident Investigation Commission & Ors**

Judge(s) Panckhurst J

Court HC, Wellington

File number CP 164-96, CP 180-96

Judg date 18 Dec 96

Note Heard with New Zealand Airline Pilots' Association Inc v Transport Investigation Commission & Ors. Appeal: New Zealand Airline Pilots' Association Inc v Attorney General & Ors (CA 300-96, CA 301-96, 16 June 1997)

Subject JUDICIAL REVIEW - two proceedings of related issues - 1) declaration sought of ability of Police to obtain access to cockpit voice recorder (CVR) and digital flight data recorder (DFDR) ("black boxes") readout by search warrant - 2) NZ Airline Pilots' Association seeks judicial review of decision of Transport Accident Investigation Commission to incorporate extracts from CVR transcript in its accident report - both proceedings in regard to collision of de

Havilland Dash 8 aircraft into hillside - relationship of Chicago Convention, Civil Aviation Act and Transport Accident Investigation Commission Act with specific regard to devices mentioned - CVR not required by law to be operated or carried in any commercial aircraft - Summary Proceedings Act s198 - in issuing warrant under s198, judicial officer must have regard to international law obligation established by Chicago Convention clause 5.12, Annex 13 - public interest immunity separate consideration - essential enquiry balance between public interest in preserving confidentiality of records and public interest in securing justice - consideration of issues of cockpit voices, risk of lack of co-operation from flight crew, seriousness of offence, stage of Police investigation - appropriate for application under s198 to be heard by District Court Judge on notice to defendants - five grounds for judicial review pleaded - further ground on Privacy Act raised - no grounds made out - issue best addressed by legislation - original orders stand

EVIDENCE

AIR & SPACE LAW

Statutes Civil Aviation Act 1990 - Crimes Act 1961 s156 - Summary Proceedings Act 1957 s198 - Transport Accident Investigation Commission Act 1990 s14 - Chicago Convention 1944 clause 5.12 Annex 13

Cases cited R v Sanders [1994] 3 NZLR 450; Television New Zealand v Attorney General (1995) 13 CRNZ 115; Ashby v Minister of Immigration [1981] 1 NZLR 222; Tavita v Minister of Immigration [1994] 2 NZLR 257; Puli'uvea v Removal Review Authority (1996) 14 FRNZ 322 ; R v Secretary of State for the Home Department, ex parte Brind [1991] 1 AC 696 ; Minister of Immigration v Teoh (1995) 128 ALR 353 ; D v National Society for the Prevention of Cruelty to Children [1977] 1 All ER 589 ; R v Chief Constable of the West Midlands Police, ex parte Wiley [1994] 3 All ER 420 ; Rogers v Jacobsen (1995) 84 A Crim R 91

Pages 31 p

Texts

Title Health and safety in New Zealand workplaces / editor, Carol Slappendel

Author(s) Slappendel, Carol

Place Palmerston North

Publisher Dunmore Press

Date 1995

Note Contents: 1. The epidemiology of work-related injury by Colin Cryer -- 2. Occupational disease by Ian Laird -- 3. State regulation of occupational health and safety by Ian Campbell -- 4. Compensation for work-related injury by Don Rennie -- 5. The industrial relations context of workplace health and safety by Glyn Jeffrey -- 6. The occupational health and safety professions by Jenny Beek et al -- 7. Dominant theories of work-related injury causation by Carol Slappendel -- 8. Industrial accidents : a sociological analysis by Tom Dwyer-- 9. Managing occupational health and safety by Douglas Pringle -- 10. Cases of best practice in occupational health and safety by Carol Slappendel

Subject INDUSTRIAL SAFETY - NEW ZEALAND; OCCUPATIONAL HEALTH - NEW ZEALAND Accident compensation, Workers compensation, Industrial accidents, Industrial relations

Statutes Health and Safety in Employment Act 1992

Classification KN198.L1 HEA

Pages 332 p
ISBN 0864692218

Alliance Group v Accident Rehabilitation & Compensation Insurance Corporation (ARCIC)

Judge(s) Judge Middleton

Court DC, Wellington

File number Decision No 61-96, DCA 130-95

Judg date 20 Aug 96

Subject ACCIDENT COMPENSATION - work injury - whether injury suffered by F was a work injury in terms of Accident Rehabilitation & Compensation Insurance Act 1992 - injury to neck described by GP as "chronic strain injury muscles and ligaments cervical spine - F advising ARCIC that his job involved inter alia making up cartons from flat sheets of cardboard at a bench which was above his waist level - ARCIC's medical advisor stating that "sustained posture flexion likely to cause this. The employer's comment does not take into account the difference in people's own height and the need for individual work stations i.e. neglects ergonomics" - ARCIC notifying appellant employer that the claim was accepted as a work related injury arising out of "gradual process occurring over a length of time not as a specific incident" - facts - held: symptoms did not appear to have been of very long duration and F apparently returned to previous occupation - injury might have been a passing phase and not an injury of the nature contemplated by gradual process - this was a transient episode which did not fulfil the requirements of a work injury - appeal allowed

Statutes Accident Rehabilitation & Compensation Insurance Act 1992 s6, s7(1)(a), s7(1)(b), s7(1)(c), s7(2), s7(5)(a), s7(5)(b), s91

Pages 6 p

Name Prime Range Meats Ltd v Accident Rehabilitation & Compensation Insurance Corporation (ARCIC)

Judge(s) Judge Middleton

Court DC, Invercargill

File number Decision No 1-96, DCA 195-93

Judg date 06 Mar 96

Subject ACCIDENT COMPENSATION - occupational injury - occupational overuse syndrome - inflammatory condition of muscle and tendon around the elbows - employer appealing against decision of ARCIC that claim be accepted - held: although appellant conscientious in endeavouring to provide a safe workplace and safe work practice, not able to go beyond the medical evidence which was uncontradicted - appeal dismissed

Statutes Accident Rehabilitation & Compensation Insurance Act 1992 s8, s91

Pages 4 p

Name Tegel Foods Ltd v Department of Labour

Judge(s) Cartwright J

Court HC, Auckland

File number AP 242-95

Judg date 18 Jan 96

Subject EMPLOYMENT LAW - health and safety in employment - s6 Health and Safety in Employment Act 1992 - appellant entered a plea of guilty to charge pursuant to s6 that as an employer it failed to take all practical steps to ensure the safety of its employee M while at work - appeal against sentence of \$12,500 fine and order that one third of fine be paid to victim - whilst M was in the bucket of a cherry picker operating a water blaster, the device destabilised and he was catapulted into a paddock where he was knocked unconscious and sustained injuries - M unable to work, unable to perform normal activities both leisure and work related, suffering blurred vision to right eye - earning capacity and enjoyment of life generally affected by injuries - trial Judge noted maximum fine \$50,000 but that not a continuing offence so fixed fine at \$12,500 - after consideration of s28(1) Criminal Justice Act 1985 direction that victim receive one third of fine - in fixing level of fine, Department of Labour v De Spa & Co Ltd considered - whether fine imposed clearly excessive or inappropriate - whether inappropriate in context of Accident Compensation legislation to award one third of fine to employee - held: no entering of guilty plea at earliest opportunity - guilty plea to be treated as a neutral factor - appellant had not made out case for imposition of lower fine - whilst it was to be acknowledged that employee entitled to payments under Accident Compensation regime, that did not exclude employer responsibility - appeal dismissed - costs

Statutes Criminal Justice Act 1985 s28(1) - Health & Safety in Employment Act 1992 s6 - Summary Proceedings Act 1957 s121(3)(b)

Cases cited Department of Labour v De Spa & Co Ltd [1994] 1 ERNZ 339; Schweder v Peter Baker Transport (1989) Ltd [1994] 2 NZLR 617, [1994] 1 ERNZ 305

Pages 9 p

Name Department of Labour v Ross Roofing Ltd

Judge(s) Judge R Joyce QC

Court DC, Auckland

File number CRN 5044011919

Judg date 06 Dec 95

Subject HEALTH - health and safety in employment - charged with failure to ensure contractor not harmed doing carpentry work - overview of New Zealand Act - mainly factual discussion - contractor's fiancée hit by falling roof tile - construction site - accident preventable - no duty to provide on-site supervisors - no duty under s18 Health & Safety in Employment Act 1992 to fiancée - charge fails

Statutes Health & Safety in Employment Act 1992 s2, s6, s11, s12, s15, s16, s18(1)(b), s50(a)

Cases cited R v Associated Octel Ltd [1994] 4 All ER 1051

Pages 19 p

Name Meadow Mushrooms Ltd v Accident Rehabilitation and Compensation Insurance Corporation (ARCIC)

Judge(s) Judge Ongley

Court DC, Christchurch

File number Decision No 90-94, DCA 54-94

Judg date 11 Nov 94

Subject ACCIDENT COMPENSATION - work injury - appeal by employer against classification by respondent of a work injury allegedly suffered by an employee - non compliance with accident reporting requirements - entitlement of employers to procedural consistency - held: could not be said Corporation had acted unreasonably on material available to it - no apparent motivation for falsification by claimant - appeal dismissed

Statutes Accident Rehabilitation and Compensation Insurance Act 1992 s65(6), s89

Pages 3

Name Health & Safety Inspector v Stevedoring Services (Nelson) Ltd

Judge(s) Judge PJ McAloon

Court DC, Blenheim

File number CRN 3006006594-5

Judg date 13 Jul 94

Subject HEALTH - two charges under Health & Safety in Employment Act 1992 - employee suffered harm at work - failure to notify inspector as soon as possible - failure to secure accident site so nothing disturbed - ship sailed away - company had distributed booklet to employees on health and safety in workplace - officers should have ensured all read and understood - if procedure followed, site would have been preserved - commonality between charges recognised - regard to principle of totality in imposing financial penalty - penalty based on application of legislation and degree of culpability of defendant company - \$2,000 fine for each charge

EMPLOYMENT LAW

Statutes Health & Safety in Employment Act 1992

Cases cited Department of Labour v De Spa & Co Ltd [1994] 1 ERNZ 339; Schweder v Peter Baker Transport (1989) Ltd [1994] 2 NZLR 617, [1994] 1 ERNZ 305

Pages 9 p

Department of Labour v De Spa & Co Ltd & Ors

Judge(s) Tipping & Fraser JJ

Court HC, Christchurch

File number AP 337-93 ; 12-93 ; 58-94

Judg date 31 Mar 94

Reported [1994] 1 ERNZ 339

Note (1994) 4 NZELC (digest only)

Subject EMPLOYMENT LAW - appeal level of fines by Department of Labour - three appeals - offences Health & Safety in Employment Act 1992 - respondent (D) employee killed - \$6500 fine - Court costs \$95, solicitors fee \$350 - respondent (W) amputation part of finger and lacerations to thumb - \$2000 fine - Court costs \$95 - respondent (G) employee died - \$5000 fine - Court costs \$95, solicitors fee \$150 - Act prevent harm to employees at work - employers positive duty to seek out hazards - s49 offences with knowledge - 3 respondents convicted under s50 - serious harm - maximum penalty \$50000 fine - D conviction end of defended hearing - W guilty at close prosecution case - Judge ruled evidence not support knowing offence - G guilty plea at outset - essence argument - not recognised increase in maximum penalties brought about by Act - maximum penalty 10 times previous penalty - existing penalties may not be adequate - relevant factors in determining fine - degree of culpability, degree of harm resulting, financial circumstances of offender, taking of remedial action, guilty plea - need for deterrence - awarding

part of fine as compensation to victim - employer's safety record - D trapped wool bale elevator - neck crushed - following accident equipment modified - submitted starting point \$10000 too low - D's degree of culpability in medium range - hazard not glaringly obvious - was foreseeable - financial circumstances should reduce level of fine - attitude to accident responsible - no guilty plea - no suggestion future need for deterrence - good safety record - considerations more compelling - increased \$15000 - \$20000 would not have been challenged - W visited by inspector - advised guard inadequate - time to take necessary steps - took view allowed continued use - reasonable accident - not following guidelines nor concentrating - low degree culpability - if fine increased need to make special arrangements with bankers - no need for deterrence - excellent safety record - appeal dismissed - G employee examining feed gate - employee not follow steps or took protective measures - company lower range of culpable - degree of harm high - no suggestion unable pay fine - immediate guilty plea - appeal dismissed - contend appeal fail because Department not given appropriate assistance to sentencing Judge - Crown's task to assist Judge reach fair and appropriate level of sentence - appellant can still succeed on appeal - costs awarded to W & G \$750 - D \$500

HEALTH

Words cons/def "all practicable steps"

Statutes Health and Safety in Employment Act 1992 s2, s5, s5(2)(b), s7, s8, s9, s10, s39, s41, s49, s50, s53 - Criminal Justice Act 1985 s27, s28(1), s55(4) - Costs in Criminal Cases Act 1967 s8, s8(6), s13(3)

Cases cited R v Crime Appeal CA 513-93 (1994) 11 CRNZ 222; Cotton Felts Ltd (1982) 2 CCC (3d) 287; R v Wihapi [1976] 1 NZLR 422 (CA); R v Hunter [1985] 1 NZLR 115, (1984) 1 CRNZ 360 (CA)

Articles

Title Health and Safety in Employment Act 1992 - duties of persons with control of places of work under s16 - fatal accident involving invitee on farm property - meaning of "occupier" - meaning of "place of work"

Author(s) HUGHES, John

Journal Employment Law Bulletin (3) May 1996:52-53

Subject Industrial safety - New Zealand

Statutes Health & Safety in Employment Act 1992 s16

Cases cited Department of Labour v Berryman (DC, New Plymouth, CRN 4068004254, 22 February 1996, Judge Abbott)

Title Work injury - claim for exemplary damages - negligence - application to strike out - Accident Rehabilitation and Compensation Insurance Act 1992

Author(s) HUGHES, John

Journal Employment Law Bulletin (8) Nov 1994:130-131

Subject Personal injuries - New Zealand; Accident compensation

Statutes Accident Rehabilitation and Compensation Insurance Act 1992 - Health and Safety in Employment Act 1992

Cases cited Akavi v Taylor Preston Ltd [1995] NZAR 33

Title Health and Safety in Employment Act 1992 - "all practicable steps" - relevance of current state of knowledge

Author(s) HUGHES, John

Journal Employment Law Bulletin (8) Nov 1994:130

Subject Industrial safety - New Zealand

Statutes Health and Safety in Employment Act 1992 s6

Cases cited Knowles v Griffins Foods Ltd (DC, Papakura, CRN 4055004540, 10 May 1994, Judge Harvey)

Name Leisure Centre Ltd v Babytown Ltd

Judge(s) Cooke, Somers & Hardie Boys JJ

Court CA

File number CA 133/83

Judg date 18 Apr 84

Reported [1984] 1 NZLR 318

Subject LEASES - fire insurance covenant by lessor - purpose of providing reinstatement fund - no implication that lessee relieved of liability for negligence -

Cases cited Marlborough Properties Ltd v Marlborough Fibreglass Ltd [1981] 1 NZLR 464; Liverpool City Council v Irwin [1977] AC 239; King (dec'd), Re [1963] 1 Ch 459; Fraser v J Morton Wilson Ltd [1965] SLT (Notes) 81; Mumford Hotels Ltd v Wheeler [1963] 3 All ER 250 ; Reynolds v Phoenix Assurance Co Ltd [1978] 2 Lloyd's Rep 440 ; Agnew-Surpass Shoe Stores Ltd v Cummer-Yonge Investments Ltd (1975) 55 DLR (3d) 676 ; T Eaton Co v Smith (1979) 92 DLR (3d) 425 ; Lofft v Dennis (1859) 1 E & E 474

Name Whale Watch Kaikoura Ltd v Transport Accident Investigation Commission

Judge(s) Goddard J

Court HC, Wellington

File number CP 316-96

Judg date 30 Apr 97

Reported [1997] 3 NZLR 55, [1997] NZAR 481

Subject ADMINISTRATIVE LAW - application for judicial review - Transport Accident Investigation Commission decision to publish report into accident to the vessel Uruao in which one person died on whale watching expedition - possibility of report defaming plaintiff - application for interim orders to preserve plaintiffs position declined - no position to preserve - the publication is a statutory requirement, no decision is involved so there is nothing to review - no procedural unfairness found

TRANSPORT LAW

Statutes Transport Accident Investigation Commission Act 1990

Cases cited New Zealand Stock Exchange v Listed Companies Association Inc [1984] 1 NZLR 699; R v Sloan [1990] 1 NZLR 474; Erebus, Re (No 2) [1981] 1 NZLR 618; Attorney-General v Car Haulways (NZ) Ltd [1974] 2 NZLR 331; Royal Commission on Thomas, Re [1982] 1 NZLR 252 (CA) ; New Zealand Airline Pilots Association v Taic & Ors (HC,

Wellington, CP 180-96, 23 July 1996, McGechan J) ; Carlton & United Breweries v Minister of Customs [1986] 1 NZLR 423 ; Nationwide News v Wills (1992) 108 ALR 681

Name Department of Labour v United Fisheries Ltd

Judge(s) Judge TM Abbott

Court DC, Christchurch

File number CRN 5009040301

Judg date 10 Feb 97

SubjectEMPLOYMENT LAW - death of defendant's employee - charged with failing to take practicable steps to ensure persons not harmed by hazard in workplace - ice-making plant - was plant a place of work - did victim act in breach of duty to take care - held (1) place of work has a temporal meaning - what the person is doing at the time is irrelevant - ice-bin was place of work in spite of entering bin in breach of instruction and duties - (2) defendant did not address deliberate or inadvertent overriding of foot pedal - victim's deliberate action of little consequence - (3) finding charge proven - (4) victim's action did not excuse defendant from liability - factor relevant to penalty

Words cons/def "place of work" ; "hazard" ; "all practicable steps"

Statutes Health & Safety in Employment Act 1992 s2(1), s5, s6, s16, s19, s25(3), s41, s50, s53 - Machinery Act 1950

Cases cited Department of Labour v Berryman [1996] DCR 121; Civil Aviation Department v MacKenzie [1983] NZLR 78; Akehurst v Inspector of Quarries [1964] NZLR 621; Chugg v Pacific Dunlop Ltd (1990) 64 ALJR j599; Buchanan's Foundry Ltd v Department of Labour [1996] 3 NZLR 112, [1996] 1 ERNZ 333 ; Edwards v National Coal Board [1949] 1 KB 704 ; Department of Labour v De Spa & Co Ltd [1994] 1 ERNZ 339 ; Canterbury Concrete Cutting (NZ) Ltd v Department of Labour (HC, Christchurch, AP 245-94, 13 February 1995, Williamson J) ; Department of Labour v Ashby Hale Long Movers Ltd (DC, Henderson, CRN 40900003405, 29 September 1994 & 24 March 1995, Judge Shaw)

Pages 33 p

Name S v District Court at Timaru

Judge(s) Panckhurst J

Court HC, Timaru

File number CP 3-97

Judg date 10 Feb 97

SubjectCHILDREN & YOUNG PERSONS - application for judicial review of Family Court decision - refusal of leave for psychiatrist to examine children - Children & Young Persons Service proceedings - allegations of sexual abuse - father acquitted - children already examined - previous psychiatrist unable to give evidence at hearing - order that psychiatrist be permitted to interview children

Statutes Judicature Amendment Act 1972

Cases cited Fiordland Venison Ltd v Ministry of Agriculture & Fisheries (MAF) [1978] 2 NZLR 341; Darvell v Auckland District Legal Services Committee [1993] 1 NZLR 111

Pages 8 p

LINX query: current state of knowledge

Health and Safety in Employment Act 1992 - "all practicable steps" - relevance of current state of knowledge, Author(s) HUGHES, John - see work accident

fit and proper - no relevant info

reasonable skill and care - no relevant info

LINX query: hazards

Title Health and Safety in Employment Act 1992 - duty of principal to employee of contractor - definition of "principal" - alleged failure to obtain information concerning hazards and to inform of hazards

Author(s) HUGHES, John

Journal Employment Law Bulletin (7) Oct 1996:134-135

Subject Industrial safety - New Zealand

Cases cited Department of Labour v Hui (DC, Auckland, CRN 5004070478, 16 August 1996, Judge Doogue)

Title Injury from exploding tyre - exemplary damages for negligence causing personal injury - threshold test of "outrageous and flagrant disregard for the plaintiff's safety" - quantum of award

Author(s) HUGHES, John

Journal Employment Law Bulletin (7) Oct 1996:133-134

Subject Industrial safety - New Zealand

Cases cited McLaren Transport Ltd v Somerville [1996] 3 NZLR 424

Title The Health and Safety in Employment Act : eliminating hazards from the workplace

Author(s) STEWART, Margaret

Journal LawTalk (431) Apr 1995:30-31

Subject Industrial safety - New Zealand

Statutes Health and Safety in Employment Act 1992

Title The hazards of COSHH [Control of Substances Hazardous to Health Regulations (1988)]

Author(s) JONES, M.

Journal Gazette 87(8) Feb 1990:19-20

Subject Industrial safety - United Kingdom; Dangerous goods

Statutes Control of Substances Hazardous to Health Regulations 1988 (UK)

Title Fire down below? : fire and explosions hazards in land

Journal Conveyancer and Property Lawyer Sep-Oct 1987:321-323

Subject Land law - United Kingdom

Title The law and control of major industrial hazards

Author(s) HAWKE, N.

Journal Jnl of Planning & Environment Law May 1986:324-335

Subject Environmental protection - United Kingdom

Title Risk management - natural hazards - time for co-ordination

Author(s) Ericksen, NJ

Journal Terra Nova 14, March 1992:14-18

Subject Risk insurance; Planning

Title Hazards control on a promise - awaiting the long-signalled Hazards Control Commission

Author(s) Kopp, Micheal

Journal Terra Nova 9, September 1991, p13-14

Subject Environmental Protection; Toxic Wastes

Title Resource management

Place Wellington

Publisher Brooker & Friend

Date 1991 -

Note NZLS Spine title: v 1. Resource management. Resource Management Act -- v 2. Resource management. Crown minerals, hazards control

Subject ENVIRONMENTAL LAW - NEW ZEALAND; NATURAL RESOURCES - NEW ZEALAND

Statutes Building Act 1991 - Building Regulations 1992 - Crown Minerals Act 1991 - Management of Water under the Resource Management Act 1991 - Resource Management Act 1991

Classification KN94.L1 RES

Pages 3 v (loose-leaf)

ISBN 0864720793

Name Department of Labour v Tranz Rail Ltd

Judge(s) Judge PJ Evans

Court DC, Wellington

File number CRN 5032016343

Judg date 22 Nov 96

Reported [1997] DCR 102

See Public Safety.

Name Railton Contracting Ltd v Department of Labour

Judge(s) Tipping J

Court HC, Invercargill

File number AP 8-96

Judg date 24 Apr 96

Subject EMPLOYMENT LAW - appeal against fines imposed under Health & Safety in Employment Act 1992 - pleaded guilty to three charges - 1) operating machine while prohibition order in force (fine: \$8000) - 2) failing to ensure machine properly guarded (\$3000) - 3) failing to give information to employee about hazards and steps to be taken to minimise danger (\$3000) - plus solicitor's fees and court costs - total fine \$14,500 - appeal allowed - early guilty plea not recognised by sentencing judge - financial details proved - nil injuries - fines manifestly excessive - reduced each \$3000 fine to \$1000 - total \$10,000 - costs and fees stand

Statutes Health & Safety in Employment Act 1992 s49, s50

Cases cited Department of Labour v De Spa [1994] 1 ERNZ 339

Name Department of Labour v Timber Stairways Ltd

Judge(s) Judge LH Moore

Court DC, Otahuhu

File number CRN 4048032881-82

Judg date 10 Mar 95

Subject SENTENCE - charge of failing to ensure that there were effective methods for identifying hazards - accident with unguarded saw blade - major mitigating factor that company now had an excellent safety record

HEALTH

Pages 3 p

Linx query: Injury

Name Innes v Attorney-General (AG) & Ors

Judge(s) Elias J

Court HC, Auckland

File number CP 152-95

Judg date 10 Jul 97

Subject CIVIL PROCEDURE - application for order that proceeding be tried before a Judge and jury - death of Matthew Innes following his forcible removal by members of the police from his home to Kingseat Hospital - cause of death "positional asphyxia occurring during transportation as the event which led to development of hypoxic encephalopathy" - "hypo encephalopathy" pleaded to have resulted from one of more "internal physical factors" including an "oxygen debt" or "cardiac-arrest" or to have resulted from a "cardio-vascular episode which was neither a result of medical misadventure nor a work injury" - heart attack - claim that "cardio-vascular episode" was not a result of medical misadventure or work injury necessary to exclude s14(1) Accident Rehabilitation & Compensation Insurance Act 1992 - determination of question whether claim barred by ACC legislation, likely to turn on medical evidence of some technicality and the provisions of Act - civil claims and jury trials - Judicature Act 1908 s19A, s19B - 5 causes of action : (1) false imprisonment or unlawful restraint; (2) public law compensation for breaches of New Zealand Bill of Rights Act 1990; (3) negligence (breach of duty of care owed to Mr Innes which were causative of or contributed to his death); (4) breach of duties of care owed by police; (5) declaration that death not covered by Accident Rehabilitation & Compensation Insurance Act 1992 - difficult questions of law - prolonged examination or investigation of technical questions - application declined

Statutes Accident Rehabilitation & Compensation Insurance Act 1992 s4, s14(1) -
Judicature Act 1908 s19A, s19A(5)(a), s19A(5)(b), s19B, s19B(2) - Mental Health
(Compulsory Assessment & Treatment) Act 1992 - New Zealand Bill of Rights Act 1990

Cases cited Innes & Anor v Wong & Ors [1996] 3 NZLR 238, (1996) 1 BACR 221;
Simpson v Attorney-General (AG) [1994] 3 NZLR 667; Upton v Green (1996) 2 HRNZ 305;
Mouat v Brydon [1961] NZLR 510; Shattock v Devlin (1988) 1 PRNZ 271 ; Prebble v
Television New Zealand (TVNZ) (1992) 6 PRNZ 113 ; Racz v Home Office [1994] 2 AC 45 ;
Green v Matheson [1989] 3 NZLR 564 ; O'M v D [1996] 2 NZLR 196 ; Lindon v James
Hardie [1994] 1 NZLR 592 ; Ward v James [1965] 1 All ER 563

Pages 9 p

Eaden v Department of Labour

Judge(s) Morris J

Court HC, New Plymouth

File number AP 34-95, AP 35-95

Judg date 13 Feb 96

SubjectEMPLOYMENT LAW - health and safety - Health and Safety in Employment Act 1992
- statutory interpretation - limited authority of informant - meaning of "serious harm" - appellant, a
builder, facing 5 charges alleging offences against s50 - whether informant authorised to bring
proceedings alleging the commission of offences against the Act, by appellant - informant
empowered to carry out functions and powers of a health and safety inspector regulating all
places of work excepting places of work associated with, inter alia, construction work - whether
informant went beyond scope of authority - appellant alleging that work involved was
"construction work" - whether "serious harm" had occurred (s25(3)(a)) - meaning of "acute
illness" - held: no reason why the inspector who lodged information, provided appointed under
s29(1), must have separate knowledge or special knowledge or qualifications - purpose of s54 to
ensure that prosecuting action taken under Act taken only by an inspector appointed pursuant to
s29(1) and not by a private informant - had legislation intended in any way to restrict the laying of
an information to specific inspectors or inspectors qualified for particular areas, it could have so
provided - - informant accordingly authorised to bring proceedings - no proof of acute illness to
standard required in a criminal prosecution - appeal allowed

Words cons/def "acute illness", "serious harm"

Statutes Health & Safety in Employment Act 1992 s2, s6, s7, s25, s25(3)(a), s29(1),
s29(2), s45, s50, s54

Pages 7 p

Name Department of Labour v Winston Jacob Ltd

Judge(s) Morris J

Court HC, Auckland

File number AP 170-94

Judg date 19 Sep 94

SubjectEMPLOYMENT LAW - work related injury - appeal by way of case stated - whether
Judge correct in law to find respondent had established, on the balance of probabilities, that in
light of Tesco Supermarkets, he had taken "all practical" steps to prevent harm by one employee

to another - arises from the dismissal of an information alleging breach of s15 and s50(a) Health and Safety Employment Act 1992 - held; yes - not prepared to infer that employee a person to be identified with the company within those principles - factual question of the relationship between the employee involved and the defendant company - note; effect of s53 only that proof of intention or the lack of it is not a necessary ingredient that the prosecution must prove

HEALTH

Statutes Health and Safety in Employment Act 1992 s15, s50(a), s53 - Summary Proceedings Act 1957 s107, s207

Cases cited Tesco Supermarkets Ltd v Natrass [1971] 2 All ER 127

Pages 5 p

LINX query: exemplary damages

Title Exemplary damages for work accident - negligence - alleged breach of statutory duty under the HSE Act - relevance of criminal conviction to "double jeopardy" - effect of New Zealand Bill of Rights Act 1990 - whether claim barred by the Accident Rehabilitation and Compensation Insurance Act 1992 - principles applicable to exemplary damages - effect of contributory negligence - jurisdiction of High Court

Author(s) ANDERSON, Gordon

Journal Employment Law Bulletin 6 (Sep) 1997:110-112

Subject Industrial safety - New Zealand; Accident compensation; Damages

Statutes Accident Rehabilitation and Compensation Insurance Act 1992 - Health and Safety in Employment Act 1992 s6

Cases cited Caldwell v Croft Timber Co (HC, Whangarei, CP 44-95, 26 March 1997, Paterson J)

Title Work injury - claim for exemplary damages - negligence - application to strike out - Accident Rehabilitation and Compensation Insurance Act 1992

Author(s) HUGHES, John. See injury.

Title Exemplary damages for work injuries

Author(s) HUGHES, John

Journal New Zealand Law Jnl Apr 1994:126-127

Subject Damages - New Zealand

Cases cited Iversen & Anor v Zendel Industries (NZ) Ltd & Anor (1993) 7 PRNZ 205

Name Caldwell v Croft Timber Co Ltd

Judge(s) Paterson J

Court HC, Whangarei

See work accident.

LINX query: all practicable steps

Title HSE Act - failure to comply with duty under s16 to take all practicable steps to ensure that persons not in the place of work are not harmed by a hazard that arises in that place of work - observations on onus of proof - meaning of "place of work" - meaning of "all practicable steps" - worker killed partly as the result of own carelessness - relevance of unforeseen deliberate act of employee in breach of contract and / or s19

Author(s) HUGHES, John

Journal Employment Law Bulletin 6 (Sep) 1997:113-114

Subject Industrial safety - New Zealand

Statutes Health and Safety in Employment Act 1992 s16, s19

Cases cited Department of Labour v United Fisheries Ltd (DC, Christchurch, CRN 5009040301, 10 February 1997, Judge Abbott)

Title Failure to take all practicable steps to ensure safety under s6 of the HSE Act - failure to train under s13 of the HSE Act - use of visual display unit - occupational overuse syndrome - definition of "serious harm" in s2 of HSE Act - causation - standard of proof - penalty (\$15,000)

Author(s) ANDERSON, Gordon

Journal Employment Law Bulletin 6 (Sep) 1997:112-113

Subject Occupational health - New Zealand; Industrial safety

Statutes Health and Safety in Employment Act 1992 s2, s6

Cases cited Stewart (Health and Safety Inspector) v Price Waterhouse Administration Ltd (DC, Wellington, CRN 5085028932, 15 May 1997, Judge Willy)

Name Department of Labour v Central Cranes Ltd

Judge(s) Cartwright J

Court HC, Auckland

File number AP 30-96, AP 262-95

Judg date 26 Jul 96

Reported [1996] 2 ERNZ 198

Note Heard together with Fletcher Construction NZ & South Pacific Ltd v Department of Labour (AP 262-95)

Subject EMPLOYMENT LAW - health and safety in employment - Health and Safety in Employment Act 1992 s18(1)(a) - failure of principal to take all practicable steps to ensure that employee of sub-contractor was not harmed while doing work that contractors were engaged to do - differing duties of principals and employers - significance of fact that no harm or injury actually caused - extent of "practicable steps" - scheme of legislation - decision on facts

Statutes Health & Safety in Employment Act 1992 s2(2), s5(1), s5(2), s18(1), s18(1)(a), s19 - Summary Proceedings Act 1957 s112

Cases cited Department of Labour v de Spa & Co Ltd [1994] 1 ERNZ 339; R v Associated Octel Ltd [1994] 4 All ER 1051, [1994] IRLR 540, [1995] ICR 281; R v Swan Hunter Ship Builders [1982] 1 All ER 264

Name Department of Labour v Cableco Metal Industries Ltd

Judge(s) Judge GA Rea

Court DC, Hamilton

File number CRN 5019022554

Judg date 18 Apr 96

Subject EMPLOYMENT LAW - alleged failure to take all practicable steps to ensure safety of employee - dangerous parts of machine - strict liability offence - held - victim employee was exposed to risk at work - exposure caused by failure of defendant to take all practicable steps to ensure safety - duties on employees - lack of care by employee not sufficient in itself to exonerate employer if employer has displayed absence of reasonable care - defendant negligent - failure to take reasonable care - charges proved

NEGLIGENCE

Words cons/def "all practicable steps" ; "all reasonable care"

Statutes Health & Safety in Employment Act 1992 s2, s6, s19, s50(a), s53

Cases cited R v City of Sault St Marie (1978) 85 DLR (3d) 161; Civil Aviation Department v MacKenzie [1983] NZLR 78; Millar v Ministry of Transport (MOT) [1986] 1 NZLR 660; Police v Starkey (1989) 4 CRNZ 400; Department of Health v Multichem Laboratories Ltd [1987] 1 NZLR 334 ; Department of Labour v De Spa & Co Ltd & Ors [1994] 1 ERNZ 339 ; Canterbury Concrete Cutting (NZ) Ltd v Department of Labour (HC, Christchurch, AP 245-94, 9 November 1994, Williamson J)

Pages 19 p

Name Department of Labour v Berryman

Judge(s) Judge TM Abbott

Court DC, New Plymouth

File number CRN 4068004254

Judg date 22 Feb 96

Reported [1996] DCR 121

Note Digest: (1996) 5 NZELC 98,394

Subject CRIMINAL LAW - no case submission - health and safety in employment charge - suspension bridge owned by farmer - timbers rotten - causing beekeeper to be killed - whether defendant failed to take all practicable steps to ensure person in place of work not harmed by hazard - whether bridge "place of work" - bridge no more than means of access to and from place of work - no case submission upheld - charge dismissed

EMPLOYMENT LAW

Words cons/def "place of work"

Statutes Health & Safety in Employment Act 1992 s2, s5, s16, s50, s67 - Summary Proceedings Act 1957

Cases cited Coult v Szuba [1982] ICR 380; Department of Labour v Powermark New Zealand Ltd [1993] DCR 65

Name Department of Labour v Punt Painting & Waterblasting Ltd

Judge(s) Judge JA Walker

Court DC, Nelson

File number CRN 4042004416, CRN 4042004417, CRN 4042005799

Judg date 19 Jun 95

Reported [1996] DCR 155

Note Alt. Cit. Burt (Health & Safety Inspector) v Punt Painting & Waterblasting Ltd ; Digest: (1995) 4 NZELC 98,353

Subject CRIMINAL LAW - defendant hired to sandblast lead-based paint from house - two children suffered lead poisoning as a result of coming into contact with sand - charges laid that defendant had not taken all practicable steps to avoid harm - held - lack of follow-up by defendant amounted to a failure to take all practicable steps - defendant convicted

HEALTH

Words cons/def "residential work"

Statutes Health & Safety in Employment Act 1992 s2, s15, s16, , s18, s50, s53

Cases cited Department of Labour v De Spa & Co Ltd (HC, Christchurch, AP 377-93, 31 March 1994, Tipping & Fraser JJ)

7.2. Other important case summaries.

Name Whale Watch Kaikoura Ltd v Transport Accident Investigation Commission

Judge(s) Goddard J

Court HC, Wellington

File number CP 316-96

Judg date 30 Apr 97

Reported [1997] 3 NZLR 55, [1997] NZAR 481

Subject ADMINISTRATIVE LAW - application for judicial review - Transport Accident Investigation Commission decision to publish report into accident to the vessel Uruao in which one person died on whale watching expedition - possibility of report defaming plaintiff - application for interim orders to preserve plaintiffs position declined - no position to preserve - the publication is a statutory requirement, no decision is involved so there is nothing to review - no procedural unfairness found

TRANSPORT LAW

Statutes Transport Accident Investigation Commission Act 1990

Cases cited New Zealand Stock Exchange v Listed Companies Association Inc [1984] 1 NZLR 699; R v Sloan [1990] 1 NZLR 474; Erebus, Re (No 2) [1981] 1 NZLR 618; Attorney-General v Car Haulways (NZ) Ltd [1974] 2 NZLR 331; Royal Commission on Thomas, Re [1982] 1 NZLR 252 (CA) ; New Zealand Airline Pilots Association v Taic & Ors (HC, Wellington, CP 180-96, 23 July 1996, McGechan J) ; Carlton & United Breweries v Minister of Customs [1986] 1 NZLR 423 ; Nationwide News v Wills (1992) 108 ALR 681

Name Whale Watch Kaikoura Ltd v Transport Accident Investigation Commission

Judge(s) Heron J

Court HC, Wellington

File number CP 316-96

Judg date 18 Feb 97

Subject ADMINISTRATIVE LAW - applications for discovery and that trial be held in camera - judicial review - claim that accident report on capsizing of plaintiff's boat in 1996 and death of 1 of 26 tourists unreasonable, in error and not based on evidence - plaintiff requesting discovery - defendant claiming public interest immunity - investigating body - assurances of anonymity given to witnesses - discovery to counsel and solicitor only limited to briefs of evidence or interviews with identities suppressed - public can see adverse report being challenged and await result without prejudging - limited in camera hearing

EVIDENCE

DISCOVERY

Cases cited R v New Zealand Rail Ltd (HC, Blenheim, T 5-95, 21 December 1995, Greig J0
Pages 5 p

Name Department of Labour v Buchanan's Foundry Ltd

Judge(s) Judge TM Abbott

Court DC, Christchurch

File number CRN 5009023632, CRN 5009023633, CRN 5009023634, CRN 5009035814, CRN 6009035815

Judg date 28 Feb 97

Subject EMPLOYMENT LAW - charges relating to failure by employer to comply with obligation to ensure safety of workers - failure to comply with obligation to provide training to employees - accidents at defendant company's foundry - fire causing injury - machinery accident causing injury - inadvertent failure to take all practicable steps will constitute an offence as long as failure can be proved - absence of fault as a defence - held - (1) finding charges relating to five proved - no clearly established work practice - obligations imposed by the charges were distinct - (2) in relation to machinery accident employee breached duty to ensure own safety - does not however provide employer with a defence - is merely relevant for mitigation - finding charge relating to failure to take all practicable steps proved - charge of failing to train employee sufficiently dismissed

Words cons/def "all practicable steps" ; "in the circumstances" ; "hazard"

Statutes Health and Safety in Employment Act 1992 s2, s6, s12, s19, s49, s50, s53 - Quarries Act 1944 s16(1) - Summary Proceedings Act 1957 s67(8)

Cases cited Department of Labour v United Fisheries Ltd (DC, Christchurch, CRN 5009040301, 10 February 1997); Civil Aviation Department v MacKenzie [1983] NZLR 78; Akehurst v Inspector of Quarries [1964] NZLR 621; Chugg v Pacific Dunlop Ltd (1990) 64 ALJR 599; Buchanan's Foundry Ltd v Department of Labour (HC, Christchurch, AP 48-96, 7 July 1996, Hansen J) ; Edwards v National Coal Board [1949] 1 KB 704 ; Department of Labour v McVicar Timber Group Ltd (DC, Blenheim, CRN 3006005655, 6 October 1993, Judge Keane) ; Department of Labour v Alexandra Holdings Ltd (DC, Otahuhu, CRN 3048020814) ; Department of Labour v Ansett New Zealand Air Freight Ltd (DC, Otahuhu, CRN 5048031426, 2 February 1996) ; Canterbury Concrete Cutting (NZ) Ltd v Department of Labour (HC, Christchurch, AP 245-94, 13 February 1995, Williamson J) ; Department of Labour v Talleys Fisheries Ltd (DC, Blenheim, CRN 3006005658, 22 February 1994, Judge Gaskell)

Pages 33 p

Name **Department of Labour v Ansett New Zealand Air Freight Ltd**

Judge(s) Judge PI Treston

Court DC, Otahuhu

File number CRN 5048031426-8-95

Judg date 02 Feb 96

Subject HEALTH - failure to ensure health and safety of employees - serious harm suffered by employee - what degree of culpability exists - must be aware of need for deterrence - fine of \$20,000 on each charge

EMPLOYMENT LAW

Statutes Health & Safety in Employment Act 1992 s6

Cases cited Tegel Foods Ltd v Department of Labour (HC, Auckland, AP 242-95, 18 January 1996, Cartwright J); Department of Labour v De Spa [1994] 1 ERNZ 339

Pages 6 p

NAME: **UNITED FISHERIES LTD v DEPARTMENT OF LABOUR**

YEAR: 1997

DATE: 1 Aug 97

COURT: HC Christchurch

JUDGE: Hansen J

FILE NO: A67/97

PAGES: 12

NOTED: [1997] BCL 878

20 TCL 37/7

[1997] ELB 130

NZCLD (5th) 1864

DESCRIPTION: Employment law

Unsuccessful appeal against conviction, sentence; failure to take all practicable steps to ensure persons not harmed; employee suffered fatal injuries when he entered ice tower to free blockage after putting weight on foot control to keep tower operating; rejected argument that ice tower was place of work when auger not running, but was not place of work when it was running; dual purpose concept fraught with difficulty; held, employee in place of work even though entered tower in breach of specific instruction from employer, in breach of own duties; company manager aware of dangerous practice; reasonably foreseeable that safety system not foolproof; simple measure required to remove hazard; onus on employer to eliminate hazards, but employees to take all practicable steps to ensure own safety under Employment Contracts Act 1991 s19; grill installed; \$25,000 fine not manifestly excessive, although on the high side in the circumstances; medium to high range culpability; ACC payments arising from accident not a relevant consideration; contributory conduct by deceased; voluntary payments to widow

WORDS: "place of work"

STATUTES: Employment Contracts Act 1991 s19

Health & Safety in Employment Act 1992 s16, s19

CASES CITED: Buchanans Foundry Ltd v Dept of Labour [1996] 3 NZLR 112 followed

NAME: **DEPARTMENT OF LABOUR v McVICAR TIMBER GROUP LTD**

YEAR: 1993

DATE: 6 Oct 93

COURT: DC Blenheim

JUDGE: Judge Keane

FILE NO: CRN3006005655, CRN3006005657

NOTED: DCB 5/1

[1994] ELB 48

DESCRIPTION: Employment law

Failure to ensure safety of employees; company had failed to ensure employee was equipped with necessary safety and equipment knowledge of how to use it; failure to place employee under supervision so as to avoid harm; employee using corrosive substance; held, company convicted of three offences

STATUTES: Health & Safety in Employment Act 1992

NAME: DEPARTMENT OF LABOUR v ALEXANDRA HOLDINGS LTD

YEAR: 1993

DATE: 12 Nov 93

COURT: DC Otahuhu

JUDGE: Judge Moore

FILE NO: CRN3048020814, CRN3048020815

REPORT: [1994] DCR 50

NOTED: [1994] ELB 47

DESCRIPTION: Criminal law

Health safety and employment; defendant pleaded guilty to failing to guard a trapping area on a punch and to train a worker while working the punch; held, part of fine could be paid to injured worker; observation on likely rise in fines for similar offences

STATUTES: Health & Safety in Employment Act 1992 s50A

Criminal Justice Act 1985 s28

NAME: CANTERBURY CONCRETE CUTTING (NZ) LTD v DEPARTMENT OF LABOUR

YEAR: 1995

DATE: 13 Feb 95

COURT: HC Christchurch

JUDGE: Williamson J

FILE NO: AP245/94

PAGES: 11

REPORT: (1995) 4 NZELC 98,326 (Digest)

NOTED: [1995] BCL 264

[1995] ELB 26

18 TCL 13/7

DESCRIPTION: Employment law

Unsuccessful appeal against conviction; health and safety; hazardous action in relation to cutting and removal of concrete parapet from demolished building; offence observed by inspector on his way to work; failure to take all practicable steps to ensure safety; ignored company rule; got out

of cherry picker; employee's failure to follow instructions went to level of penalty rather than culpability of employer; safety supervisor should have been present; successful sentencing appeal; fine of \$2,250 reduced to \$1,500; previous good record; safety measures in place; no actual harm

WORDS: "take all practicable steps to provide and maintain a safe working environment for employees"

STATUTES: Health & Safety in Employment Act 1992 s6, s19, s50

NAME: DEPARTMENT OF LABOUR v TALLEYS FISHERIES LTD

YEAR: 1994

DATE: 22 Feb 94

COURT: DC Blenheim

JUDGE: Judge Gaskell

FILE NO: CRN3006005658, CRN3006005659, CRN3006005660

NOTED: DCB 5/2

NZCLD (3rd) H-116

[1995] ELB 65

[1994] ELB 97

DESCRIPTION: Employment law

Defendant faced three charges relating to an accident where an employee of defendant company had two fingers amputated while working; corn harvester operator; no rear guard; exposed chains and belts of transmission machinery; employee had been given warning but no training; evidence that employee had acted contrary to instructions; held, dismissal of charge that defendant failed to take all practicable steps to ensure that employee was adequately trained; defendant failed to ensure safety of employee, \$300 fine; defendant failed to notify Secretary of Labour, fine \$5,000

STATUTES: Health & Safety in Employment Act 1992 s2(4), s25(3)(a)

Criminal Justice Act 1985 s28

7.3. Law Commission Library materials

INTERNATIONAL

Topic: involuntary manslaughter and corporate manslaughter (Great Britain)

Legislating the Criminal Code: Involuntary Manslaughter, no 237, Great Britain Law Commission, 1996.

Corporate manslaughter: the present law, faults in the present law, a new offence of corporate killing, proposals for reform, recommendations. See hard copy notes.

Topic: tort and accident law (Canada)

Exploring the Domain of Accident Law - Taking the facts seriously, 1996, Oxford University Press. Canada. Donald Dewees, David Duff, and Michael J Trebilock. Written by a lawyer and two law professors.

By looking at empirical evidence in five major categories of accidents - auto, medical malpractice, product-related accidents, environmental injuries, and workplace injuries - the authors evaluate the degree to which the tort system conforms to three normative goals: deterrence, corrective justice, and distributive justice. The authors review the deterrence and compensatory properties of the tort system, and then review parallel bodies of evidence on regulatory, penal, and compensatory alternatives. See hard copy photocopy of table of contents and chapter 6 on workplace injuries, which includes discussion of tort law.

Topic: Occupational Safety and Health (Australia)

Occupational Injury and Disease Statistics: Proposals for a Minimum Data Set - a discussion paper. The Australia National Occupational Health and Safety Commission Occupational injury and disease statistics: proposals for a minimum data, 1985.

This paper noted that development and implementation of agreed standards for occupational injury and disease statistics in Australia had only limited success to 1985. It concluded that the availability of usable and reliable statistics of occupational health and safety was a necessary prerequisite to the formulation of effective policies and strategies aimed at improving the health and safety of Australian workers.

Topic: insurance and prevention (Sweden)

Insurance and Prevention - some thoughts on social engineering in relation to externally caused injury and disease, eds Tore J Larsson and Alan Clayton, IPSO Factum; 46: 1994. This contains papers from participants, including some New Zealanders, at an insurance and prevention conference in France in September, 1993. The papers cover topics such as the prevention of occupational injuries, implications of certification and regulatory systems for expert manpower and training, recent developments in workers' compensation. See hard copy chapter by Andrew Hale.

NEW ZEALAND

Topic: commission of inquiry into an air accident

Report of the Royal Commission to inquire into The Crash on Mount Erebus, Antarctica of a DC10 Aircraft operated by Air NZ, 1981. Justice Peter Mahon.

Topic: Disasters (Cave Creek)

Department of Conservation Gazette. Department of Conservation, 1995. Planning and Development Select Committee: Performance Review of the Dept for 1994/1995.

The State Service Commissioner's Review of the Department of Conservation under s 6(b) of the State Sector Act. Includes SSC recommendations. See hard copy notes.

Conservation Management - History and Systems of the Department of Conservation, Department of Conservation, 1995. This is a summary of the background papers about the Department following the report of the Commission of Inquiry into the Cave Creek tragedy, and the State Services Commission initiating a performance review of the department and its chief executive under the State Sector Act.

Topic: Occupational safety and health

Government Response to the Report of the Labour Committee on Inquiry into the Administration Occupational Safety and Health Policy, 1997.

States the ACC scheme as it applies to workplaces and the HSE Act are complementary measures aimed at achieving positive health and safety outcomes in the workplace at the lowest possible cost. See hard copy notes.

Economic Development Commission Response to Acosh Discussion Paper on Occupational Safety and Health Reform, David Haarmeyer, February, 1989, Economic Development Commission. See hard copy of this brief report.

Regulating for Occupational Safety and Health: a submission to the Minister of Labour, New Zealand Business Roundtable, September 1988.

Note 1988. States that the NZ system of regulating occupational health and safety standards is cumbersome, costly, and of questionable effectiveness, and in this sense in need of reform. However, reform should not be a first priority in seeking an environment more conducive to workplace health and safety. Recommends further deregulation of the labour market and removal of the ACC's monopoly on basic accident insurance, and consideration of the case for introducing some form of negligence tort. Suggests that in some cases there ought to be direct government involvement in workplace health and safety, this is likely to be limited to particular information problems (such as hazards with long latency periods or substantial spillover effects) or groups of workers.

Topic: community safety and mental health

Community safety: Mental Health and Criminal Justice Issues, report no 30, NZ Law Commission, 1994.

NZ Law Commission considered with the purpose of protecting members of the public from substantial risk of harm from individuals whose release into the community would pose that risk relevant provisions in the Mental health(Compulsory Assessment and Treatment) Act 1992 and the Criminal Justice Act, 1995, including the definition of mental disorder in the 1992 Act, and whether the Criminal Justice Act 1985 or any other enactment should be amended to confer a power to continue to detain a person beyond the time the person is, under the present law, entitled to be released.

Topic: Personal Injury

Personal Injury: Prevention and Recovery, Report on the Accident Compensation Scheme, Law Commission, report no. 4, 1988.

Topic: Employment Law

NZ Institute of Industrial Relations Research Conference on Employment Law, Present developments and future issues, 8 October, 1993. Includes various papers on the Employment Contracts Act. See hard copy of the paper by John Hughes on Enforcing Safety Standards.

Topic: Employment Safety Standards

The New Zealand Institute of Industrial Relations Research Conference on Employment Law Present Developments and Future Issues - Wellington, Friday 8 October, 1993.

This report comprises papers delivered at a conference on employment law. The papers mainly focus on the Employment Contracts Act. John Hughes of Canterbury University delivered a paper on enforcing safety standards. John Hughes discusses three Acts which radically altered the environment for health and safety in the past three years. The Acts are: The Employment Contracts Act 1991, the Health and Safety in Employment Act 1992, and the restrictions on coverage for accident compensation under the Accident Rehabilitation and Compensation Insurance Act 1992. See hard copy of paper.

Topic: recreational injuries

Consultation Paper on Recreational Injuries: Liability and waivers in Commercial Leisure Activities, Law Reform Commission of British Columbia, 1993. This deals with sports, civil liability, and insurance. There is discussion of torts.

Topic: ACC

ACC Responsibilities and Liabilities, Papers from the ACC Conference, 1994, Wellington.

Various speeches on the role of the ACC, including notes on managing the work accident by John Chadderton, EAP Services.

A Guide to Employers' Responsibility for Accident Rehabilitation and Compensation. Accident Rehab and Compensation Insurance Corporation, 1994.

Accident Compensation 1995, Accident Rehabilitation and Compensation Insurance Accident Compensation 1995.

A New Prescription for Accident Compensation, NZ Employers Federation Inc, December 1995. This is described as an analysis by the NZEF of the background to NZ's accident compensation system, the problems that have developed - particularly with respect to the employers' account - and options for much-needed ACC reform.

7.4. Library Summary Hard Copies

7.4.1. OSH Library

A Guide to the Health and Safety in Employment Act 1992 - outlining the law affecting people at work, Department of Labour, May 1994. This covers the background and objects of the Act, duties of employers and employees, codes of practice, and offences and penalties.

7.4.2. ACC Library

Whatever happened to no-fault compensation ?, Grant Duncan, Employment Today, September 1996.

Exposed Unawares, Don Rennie, Employment Today, March 1997.

The Health and Safety in Employment Act Two years on - the tests are tighter, IPM News, August/September 1995.

ACC Reform and workplace safety and health, G. Duncan, J. Occupational Health Safety - Australia New Zealand 1995, 11(4): 381-385.

Crown Immunity and ACC Reform, Kerry Amodeo, Safeguard September/October, 1997.

The Health and Safety in Employment Act 1992: An Update and Developments, Peter Kiely, NZ Journal of Industrial Relations, 22(2): 189-207.

Better Safe than Sorry (Health and Safety in Employment Act), Geraldine McManus, NZ Business, November, 1996.

Workplace Safety and Accidents Handbook, Brooker's, October, 1997, table of contents.

The Bradley Report on the Effect of the Health and Safety in Employment Act 1992 with a special focus on section 13, Selwyn Bradley, October 1995.

ACC publicity booklets

Your Guide to ACC - working with you to speed your recovery.

Introducing ACC.

7.5. Other cases considered by WEB Research

Helleman v Collector of Customs, Supreme Court, 1966, NZLR 705. Strict liability offences.

Nordik Industries Ltd v Regional Controller of Inland Revenue, Supreme Court, 1976 1 NZLR 194. The liability of a company concerning the acts of one of its employees.

R v Murray Wright, 1970, NZLR 476. A company cannot be convicted of manslaughter.

Innes v Wong, 3 NZLR 1996 238, accident compensation cover and damages against various authorities, tort, and public law damages.

Simpson v Attorney General (Baigent's Case) 3 NZLR 1994 667, Tort, crown immunity, whether the crown may be vicariously liable for torts committed by people executing or purporting to execute search warrants.

Meridian Global Funds Management Asia Ltd v Securities Commission 3 NZLR 7, rules by which knowledge of company's officer could be attributed to the company.

Leisure Centre Ltd v Babytown Ltd 1 NZLR 318, lessor's covenant to insure and reinstate premises did not affect the lessee's liability for damages following a fire negligently caused by the lessee.

Akehurst v Inspector of Quarries: 1964 NZLR 621, breach of safety rules, meaning and effect of rules "so far as reasonably practicable."

Bonner v Karamea Shipping Co Ltd 2 1973 NZLR 375, damages brought by an employee against an employer.

Civil Aviation Department v MacKenzie, 1983 NZLR 78, Court of Appeal considered the position of a person charged with an offence under s 24 of the Civil Aviation Act 1964 (of operating an aircraft in such a manner as to be the cause of unnecessary danger to persons and property) . The Court held that mens rea was an element under the section and total absence of fault was a defence to the charge.

Edwards v National Coal Board King's Bench Division 1949, fatal accident, breach of statutory duty to make secure, whether "reasonably practicable."

Mersey Docks and Harbour Board v Coggins and Griffith (Liverpool) Ltd and another, 1947 Appeal Cases 1. (Employer liability)

Injury to three people by a crane operator. One injured person sued the harbour authority and stevedores for damages. The court held that the harbour authority, as general permanent employer, was liable, not having discharged the heavy burden of proof so as to shift to the stevedores its prima facie responsibility for the negligence of the crane operator, who in the manner of his driving was exercising the discretion it had vested in him.

Chugg v Pacific Dunlop Ltd 1990 64 ALJR 599

An Australian High Court case examining failure to provide system of work “so far as is practicable safe.”

Aviation

Vertical Flight Management Ltd v Airwork (NZ) Ltd, unreported, HC, 6 November, 1997.

Vertical Flight Management Ltd v Airwork (NZ) Ltd, unreported, HC, 26 November, 1997. (Final reserved judgment).

NZ Airline Pilots’ Association Incorporated v AG & Ors, Court of Appeal, unreported, 16 June 1997.

Air NZ Ltd v Samu ELB 1994 43.

Air NZ Ltd v Samu 1 ERNZ 93.

Health and Safety in Employment Act 1992

Department of Labour v De Spa & Co Ltd, 1 ERNZ 339.

Caldwell v Croft Timber Co Ltd ERNZ 1997 136.

Department of Labour v Independent Fisheries Ltd, unreported, DC, ELB (8) Nov 1994: 127.

Health and Safety Inspector v Glenhouse Service Station (1975) Ltd, unreported, DC, ELB (8) Nov 1994:128.

Knowles v Griffins Foods Ltd, 10 May 1994. unreported, DC, ELB (8) Nov 1994:130.

Higgison v Buchanan’s Foundry Ltd, unreported, 14 December 1995. Employment Law Bulletin, May 1996, issue 3, p 52.

Buchanan’s Foundry Ltd v Department of Labour, High Court, 7/6/96 19 30. Employment Law Bulletin, May 1996, 52.

Buchanan’s Foundry Ltd v Department of Labour, High Court, The Capital Letter, volume 19, 1996 p 9.

Kawarau Raft Expeditions Ltd v Superintendent of Mercantile Marine 1996, Butterworths CLB 1120 [1996], p 689.

Punts Painting & Waterblasting Ltd v Burt (Health and Safety Inspector), unreported, 21 December 1995, High Court, The Capital Letter, volume 19, 1996, p 7..

Department of Labour v Berryman, unreported, 22 February, 1996, District Court, Employment Law Bulletin, May 1996, issue 3, p 52.

Cases we were unable to locate

Tegel Foods Ltd v Department of Labour, unreported, High Court, 18 January, 1996.

Department of Labour v Ross Roofing Ltd, unreported, DC, Auckland, 6 December 1995.

Department of Labour v Buchanan's Foundry Ltd, unreported, DC, Christchurch, 28 February, 1997.

8. THE RESEARCH IN COGNITIVE SCIENCE

This section reviews in detail developments in cognitive science that enhance human and enterprise performance, health and safety. A *Glossary of Terms* containing definitions of key concepts is attached. The implications for the application of this knowledge to the responsibilities of managers under the HS&E Act are discussed.

8.1. 'Depth-Mind' To Knowledge Base

A comprehensive review of developments in cognitive science in the context of human error provided by Reason (1990).

In this section, we look at the notions of mind and reality and at attempts to explain the workings of the human 'depth-mind' or 'subconscious'. We reflect on recent findings in neuro-science research before introducing contemporary views of how the human mind works. As ongoing research is advancing the state of knowledge into occupational expertise and related fields, we can expect the research findings to be further applied to improve health and safety at work.

We review how, according to depth-mind practitioners, the human subconscious:

- *maintains personal reality* by making people act like the person they see themselves to be;
- *creatively solves problems*;
- *provides psychological drive and energy* to accomplish goals.

We also comment on values, beliefs, attitudes, habits, self-talk and self-image and the powerful techniques of visualising and affirming.

For some scientist philosophers 'mind' is a universal concept. It has been defined as a systems phenomenon characteristic of all living organisms, societies and ecosystems. For example, from the human perspective, the quantum physicist Capra (1982) and his associates define the relationship between the human mind and brain:

"This integrated whole of (human) mental activity includes self-awareness, conscious experience, conceptual thought; symbolic language - characteristics that exist in rudimentary form in various animals but unfold fully in human beings. The human mind or psyche is the dynamics of human self-organisation, and the brain is the biological structure through which this dynamics is carried out."

Given this definition, it is argued that "*the dynamics of human self-organisation*" involves systemic, goal-directed human information processing. Competent, balanced people are those who have 'got their act together'. Such people accept and demonstrate personal responsibility for self-organisation in managing their personal concerns in accord with the character ethic.

From an organisational perspective, Pfeffer (1981) says that organisations are information-processing systems packed full of shared symbolism and ritual, language, meanings, beliefs and emotions resulting from the interactions between people and the environments in which they are required to perform. Over the last 50 years, with the development of systems thinking and technology with which to read, transmit and manipulate symbols together, organisations as information-processors now have the opportunity to take the notion of organisational memory further.

"Now we see the dawning of a whole new era, in which we employ a form of technology that is a substitute for mind."

(Johnson, 1996).

Organisations (and larger socio-systems) may now develop by applying the five disciplines of the learning organisation (Senge, 1990;1994): systems thinking, personal mastery, mental models, building shared vision and team learning to benefit from the phenomenon of the organisational mind.

The human 'whole mind' can be viewed as a powerful information-processor, much more powerful than any known computer in existence. It is capable of highly complex operation from the conscious or 'surface mind' to the subconscious or 'depth-mind'. For example, we *analyse*, *synthesise* and *value* when we think. We can experience a wide range of feelings and emotions.

Our personal beliefs and values are found in the constant dialogue between conscious and subconscious levels of the mind and we can conjure up vivid images in our 'mind's eye'.

A myriad of healthy, well developed and utilised neuronal pathways interconnect to form the complex and dynamic neuronal network humans activate to access the knowledge-base that enables, modifies or denies the performances desired by the human rational and emotional minds (Goleman, 1995). Humans have two minds - one that thinks and one that feels - that must operate in harmony if performance is to be safe and efficient. Emotion is central to the process of rational thought; it is a key element of learning and decision-making.

Rasmussen (1986), investigating cognitive control mechanisms, defined three levels of human performance:

skills-based;
rule-based; and
knowledge-based.

Athletes know it is essential for peak and safe performance to 'warm up' before competing at the skills-based level of performance to get "*a few thousand brain cells firing in a particular, established pattern*". Athletes also know how important it is to prepare themselves emotionally before competing. Preparation for effective individual, team or organisational performance in all fields of human endeavour involves the purposeful integration of both 'hearts and minds'.

The benefits of mental practice to improve performance at the rule- and knowledge-based levels are also well documented but not so well known by practical people.

"Rasmussen's model is primarily directed at the ... serious errors made by those in supervisory control of industrial installations, particularly during emergencies in hazardous process plants."

(Reason, 1990).

A practical, useable conceptualisation of human information processing increasingly applied for organisational safety - *System Safety* - is Reason's (1989a; 1990) 'Fallible Machine' (see Appendix: Glossary Figure 1 'Human Error' and Figure 2 'A Design for a Fallible Machine'). Reason, in his *System Safety* model, utilises Rasmussen's skill-based *slips* and *lapses*, and rule- and knowledge-based *mistakes*, to reduce the risk of human error.

8.2. Reality

The human perception of reality is hardly objective. It is likely to be biased, distorted and inaccurate. According to Vygotsky reality is a social and cultural construct.

For example, five hundred years ago Copernicus (1473-1543) showed that the Earth was not the absolute fixed centre of the Universe and that human beings were not omnipotent in the Universe as the Church of the time believed. Scientists and philosophers have been trying to come to terms with it ever since, for example:

"Placed in the vastly expanded cosmos of modern astronomy, the human being now spins adrift, once the noble centre of the cosmos, now an insignificant denizen of a tiny planet revolving around an undistinguished star at the edge of one galaxy among billions, in an indifferent and ultimately hostile Universe."

(Tarnas, 1990).

The creative but heretical discoveries of Copernicus were supported and advanced when the 'new technology' of the telescope fell into the hands of Galileo (1564-1642). Galileo ran into serious, painful problems with the Church which lasted 20 years - the religious authorities were thinking and hearing what they had been conditioned to think and hear for centuries. In turn, medieval church dogma conditioned and controlled the masses. But the thinkers then and since, knew that the human mind was on its own in the Universe.

"If the only reality that the human mind had direct access to, was its own experience, then the world perceived by the mind was ultimately only the mind's interpretation of the world."

(Tarnas, 1990).

In a digest of a talk by systems thinker Russell Ackoff, Johnson (1996) traces the evolution of human intellect and social systemic thinking from the Church controlled Middle Ages through the Renaissance, the Machine Age and the Industrial Revolution to the dawn of the Systems Age. Johnson shows how the mechanistic, linear thinking of the Machine Age shaped human reality in terms of cause-and-effect and notes that environmental factors were excluded as causal explanations for anything; nothing happened by chance because all was pre-determined.

These notions and analysis as a method of inquiry led Isaac Newton to conclude that the universe was a self-contained machine - a hermetically sealed clock with no environment. The Machine Age lasted until the mid 1940s -1950s when Cybernetics (1947) and General Systems Theory (1954) emerged. The Systems Age in which humankind now lives and works is information- and knowledge-based; it requires environmental effects to be acknowledged; analysis is slowly yielding to synthesis and the linear thinking that still dominates much of human endeavour is now moving to systems thinking. Johnson concludes with observations that computers and automation have clearly transformed countless aspects of our lives and that we see the dawning of a whole new era in which systems thinkers employ technology that could become a substitute for Mind.

Fortunately, human-computer interface (HCI) research over the past two decades (since Engel and Granda, 1975) has ensured the Principles of Human-Computer Dialogue Design are well advanced. Human factors problems of automation and their effects on human performance are also well known.

Senge (1990) says that cultures, beliefs and language programme the subconscious. He reminds us that language is particularly powerful in shaping human perception:

*“The effects of language are especially subtle because language appears not so much to affect the **content** of the subconscious but the way the subconscious **organises** and **structures** the content it holds.”*

“ ... if all we have is a linear language, then we think in linear ways, and we perceive the world linearly, that is - as a chain of events.”

Western languages tend to be linear in that actor-action structured subject - verb - object prevails, and effect follows cause. Westerners tend to think naturally in linear ways, rather than systemically. But for those who practice systems thinking, reality is perceived systemically as well as linearly.

Our conscious mind perceives our unique version of ‘reality’ for us. It investigates and interprets how we ‘see’ the world. Each of us perceives reality differently because of our unique, individually accumulated experience. Our experience is accumulated continually as we gather information, through the five senses, about the world and what we do in it. Our unique version of reality, our experience, is continually and automatically recorded, organised and stored as patterns of information in our subconscious. Senge (1990) concludes.

“The subconscious appears to have no particular volition. It neither generates its own objectives nor determines its own focus. It is highly subject to direction and conditioning - what we pay attention to takes on special significance to the subconscious.

... There are many ways by which the subconscious gets programmed. Cultures program the subconscious. If you grow up in a society that discriminates sharply between certain races or castes, you will literally see and interact with people differently from the way you will if you grow up in a culture that is less race or caste conscious. Beliefs also program the subconscious. It is well established, for example, that beliefs affect perception: if you believe that people are untrustworthy, you will continually ‘see’ double-dealing and chicanery that others without this belief would not see.

... The subconscious is not limited by the number of feedback processes it can consider. Just as it deals with far more details than our conscious mind, it can also deal with far more intricate dynamic complexity. Significantly, as it assimilates hundreds of feedback relationships simultaneously, it integrates detail complexity and dynamic complexity together.”

We not only organise and store the information relevant to an experience in our subconscious, but how we feel emotionally about it as well. Then the subconscious has the capacity to sift the information presented to it, grasp relationships and synthesise them for problem-solving with novel, creative intuitions.

‘Depth-mind’ psychologists consider this information-processing goes from perception, through the processes of associating, evaluating to decision-making:

- *Perceiving.* We use our senses to sort out the information we need to interpret what is going on; that is, our own unique version of reality. But our perception is not always as accurate or as complete as we would like it to be. Humans have severe limitations as information-processors in working (short-term) memory. Our conscious information-processing capacity is easily overloaded by detail complexity (see Glossary).
- *Associating.* What we perceive from situations and tasks we are confronted with, is associated with our ‘experience’ stored in our subconscious. All new information is associated with the information already stored. The subconscious asks:

‘Have I seen anything like this before?’

- *Evaluating.* As “we have enormous capacities to deal with detail complexity at the subconscious level that we do not have at the conscious level” (Senge, 1990), we then subconsciously evaluate the new information with the information that is our experience. The subconscious asks:

‘How does this new information compare with what I already know?’

- *Decision-making.* Then we decide how to react, what to do or what not to do, depending on our immediate needs and goals. We decide to take some action; to ignore the issue; or, to let someone else make the decision.

We know that something like this does go on when we do not have the answer, or when what we need to remember is on ‘*the tip of the tongue*’. We have all said ‘*we’ll sleep on it*’ when the answer eludes us. But the neuro-scientists are now getting closer to unravelling the processes of the human brain. The re-emergence of the cognitive science tradition over the past 30 years or so has provided new insights into how humans obtain, organise, process, store and retrieve information.

Reflect on the function of the buffer store structure in Glossary Figure 2:

“The most recently run inputs from working memory are held in the buffer store for goodness of match processing in the knowledge base.”

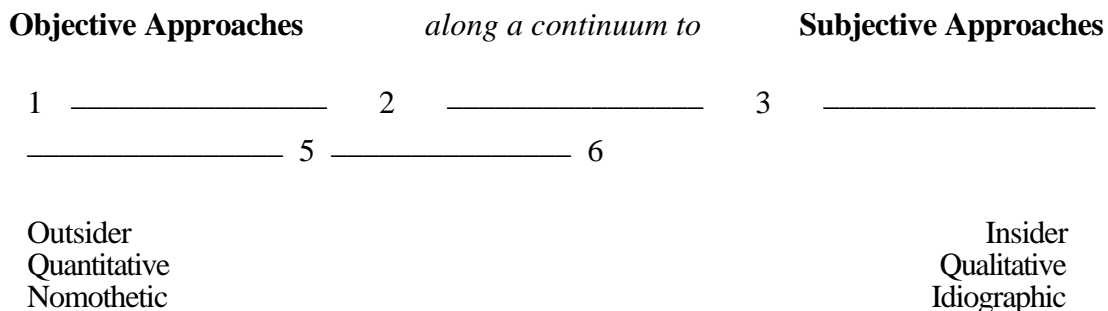
(Reason, 1990).

Similarity-matching, matching like-to-like, is one of the two basic heuristics utilised in human information-processing; it is a research-derived update by contemporary cognitive scientists of the depth-mind processes of associating and evaluating. Reason (1990) writes:

“Such fundamental aspects of experience as the degree of likeness between events and their frequency of prior occurrence have been termed intuitive concepts. Similarity and frequency information appear to be processed automatically without conscious effort, or perhaps even without awareness, regardless of age, ability, cultural background, motivation or task instructions. There is a strong case for regarding them as being the computational primitives of the cognitive system.”

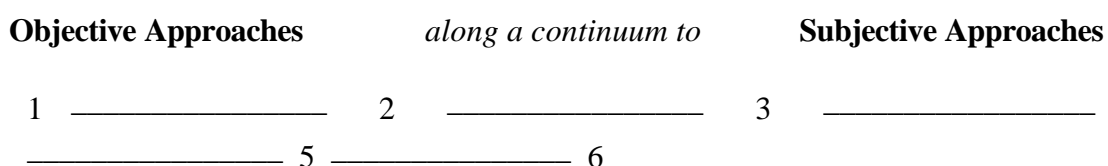
8.3. Defining Reality along a Continuum

The concept of reality is an issue in organisational behaviour. The Burrell and Morgan Typology (1979) defines reality along a continuum from objective to subjective approaches to social science. It embraces core ontological assumptions, assumptions about human nature, epistemology and research methodology. Reflect on the diagram and the six numbered statements below:



For ontological/human nature assumptions, the numbers 1 to 6 along the continuum define reality from objective to subjective as:

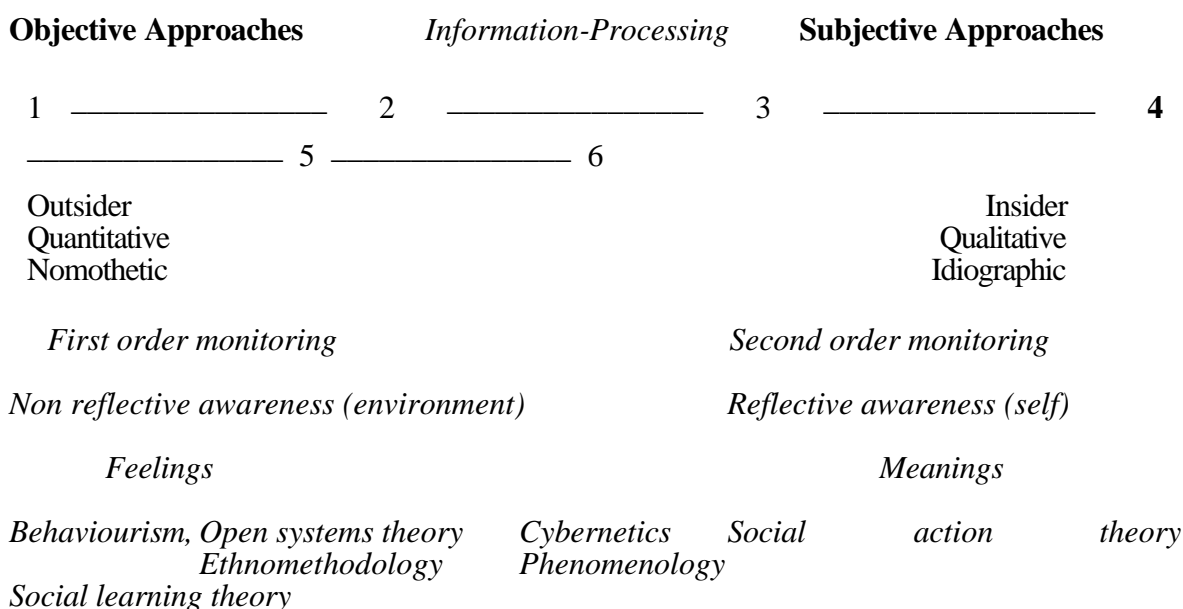
1. a concrete structure and humans as *responding mechanisms*; researched with behaviourism, social learning theory;
2. a concrete process, humans as adaptive agents; researched with open systems theory;
3. a contextual field of information, humans as information-processors; researched with cybernetics;
4. symbolic discourse, humans as social actors; researched with social action theory;
5. a social construction, with humans creating their realities; researched with ethnomethodology;
6. a projection of human imagination and humans as transcendental beings; researched with phenomenology.



Behaviourism, Open systems theory Cybernetics Social action
theory Ethnomethodology Phenomenology
Social learning theory

The next diagram enhances Burrell and Morgan's continuum by extending 'information-processing' across the gap between objective and subjective approaches. The notions of non reflective awareness (environment) and reflective awareness (self) are part of a promising attempt to "systematise a psychological approach to affective descriptions." (Porac, 1990). The Systems Age requires the relationships between self and the environment to be acknowledged. These many relationships should be seen as interconnected flows of quality information.

Quality information is information that is timely, research-derived, goal/situation relevant, accurate and as current and complete as possible.



Cognitive researchers are urging a movement away from the lower order behavioural end, towards the qualitative, cognitive 'depth-mind' or knowledge base end of the continuum. In searching for answers to the question: "What's going on here?", researchers, directors, chief executives and managers, will better be able to utilise a situation-appropriate systemic, synergistic blend of behavioural, information-processing and phenomenological (Benner and Wrubel, 1989) perspectives to link research, theory-building and practical applications in modern work.

The pressing need is for realistic applications and results appropriate to today's changing organisations and the uncertain, turbulent data laden environments in which people are expected to perform competently, healthily and safely for personal and business success.

8.4. Current Reality

From the creative, motivational perspective, Senge (1990) says people with high levels of personal mastery (the discipline of personal and professional growth and learning) continually expand their capabilities to create the results in their lives they desire. The difference between personal vision (what they truly want) and their current reality (where they are now relative to what they want) generates the creative energy to bring personal vision and current reality together with an intrinsically motivating force called 'creative tension'. Creative tension is often diluted, perhaps overcome by emotional tension.

Thus, when there is a discrepancy between what we truly want and what we actually get from work, the state of disequilibrium generates a feeling of tension within us associated with a feeling of dissatisfaction. The tension triggers a need to improve. If we are to get the results and satisfaction we truly desire this tension must be creative. We are then likely to search for more information relevant to the situation, better to assess it and respond creatively to reduce the feelings of tension and dissatisfaction. Along the way, we must eliminate the effects of dysfunctional emotion and 'structural conflict' from the process (Senge, 1990).

8.5. Values, Beliefs, Attitudes and Habits

Values and beliefs are the personal criteria by which we size up the opportunities that come along, and decide our options. They will influence the goals we set and the actions we take to achieve them. Although the activities in the conscious level of the mind influence personal values in many ways, these lie in the subconscious 'too deep for words'. No one but an individual can establish their personal values; they are created in the constant dialogue between conscious and subconscious levels of the mind.

Each individual perceives the world differently. Each human being develops his or her own unique opinions and feelings about persons, objects or events. These opinions and feelings become our attitude to these persons, objects or events. These attitudes remain with us until we consciously decide to change them. An entrenched attitude becomes a habit.

An attitude is the way we *feel* towards people and things. Our attitudes control the way we act in approaching or avoiding people, objects or events; we lean either away or towards people and things in our subconscious. Attitudes can not be 'positive' or 'negative' until they are related to a goal, when they influence goal achievement one way or the other. Attitudes form from the time we are born as we interact with and are conditioned by our various environments.

"Most of our attitudes are learned incidentally, rather than as a result of preplanned instruction. Conditions that form or modify attitudes surround the individual constantly, from birth onward. As a young child, a person acquires attitudes toward parents, brothers and sisters, other children and adults. The child's experiences lead to attitudes towards animals, such as cats and dogs, snakes, spiders and insects.

Some of the attitudes acquired early in life are remarkably persistent and resistant to change. Usually as a result of family living, the young child also acquires attitudes

related to sharing possessions, keeping promises, helping people and making truthful statements. From associating with playmates, the child may also acquire attitudes of co-operation, competition, compromise and fair play as well as combativeness and vengeance."

(Gagné, 1977)

Children (and others not so young), imitate their heroes, particularly when their heroes are seen to be enjoying what ever they are doing. If Olympic gold medallist **Ian Ferguson** said to a young canoeist, *"You really are doing very well"*, that young canoeist would very likely picture herself as *doing very well* and experience the emotions associated with pride and personal satisfaction. On the other hand, the words *"you clot"*, will result in the 'clot' seeing himself as a 'clot' and experience the emotions associated with failure. It is very, very important to set a good example, even if you are not a public figure.

Then, the culture of organisations has a marked effect on the attitudes of those who work in them.

A well entrenched positive or negative attitude becomes either a good or a bad habit.

The link between habits and performance has been acknowledged for centuries. Aristotle, for example, concluded that:

We are what we repeatedly do. Excellence, then, is not an act, but a habit.

There is a difference between performing on the conscious as opposed to the subconscious level. Clearly, the subconscious controls the human 'automatic functions' like heart beat and breathing. The subconscious also handles a wide range of 'learned automatic functions' like walking, tying shoe laces and reciting multiplication tables. When we know how to ride a bike we do not have to think about it; the same goes for gear-changing when driving a car. Some of these activities are incredibly complex, yet most beginners soon perform them automatically without consciously thinking about them. The proficient performer makes it look so easy and effortless. Proficient people perform with ease at the skills-based and rule-based level of performance. Their performance:

"becomes fluid and flexible and highly proficient. The chess player develops a feel for the game; the pilot stops feeling s/he's flying the plane and simply feels that s/he's flying."

(Dreyfus and Dreyfus, 1979; 1980).

We store 'know-how' in our subconscious and access it through working memory when it is needed (see Glossary figure 1: 'knowledge-base'). Our personal repertoire of 'know-how' is associated with an array of good and bad habits that have taken time, effort and perhaps pain to acquire.

We have been conditioned for good or bad by what we have experienced in the past. So we can also acquire bad habits that increase the risk of accidents and result in inefficiency. It saves a lot

of time, effort and worry to have good, productive habits. They help us to function safely and efficiently.

Many people feel comfortable with how they do things now, with maintaining the status quo. Doing new, strange things can generate uncertainty and cause anxiety and stress. Old habits, irrelevant to changing times, can hinder our personal growth and business prospects. Old, inappropriate attitudes and habits very often block new options for personal growth, change and progress and severely limit our potential as human beings.

The advice of depth-mind practitioners is that once we accept we have a bad habit, we can decide to get rid of it. It takes time, but with the help of our powerful subconscious, it can be done. Because entrenched attitudes underlie habits, getting rid of bad habits means we have to change our attitudes first. Achieving this means sustained personal goal-directed effort embracing behaviour modification at one end of the reality continuum through to visualising and affirming at the transcendental end. Visualising and affirming are discussed under self-talk and self-image.

8.6. Self-Talk

Self-talk is the constant conversation we have with ourselves as we constantly assess, interpret and make judgements about the situations and events we experience, for example:

- a negative *"There I go again"; "This is going to be one of those days"*, or,
- a positive *"I did that very well"; "This is a good day for me"*.

Self-talk is three dimensional. We talk to ourselves in words, we associate pictures with the words and at the same time it is likely we will feel some *emotion*:

Words - Pictures - Emotion

For example, suppose your partner has taken the car shopping. Then, a couple of hours later, someone phones to report that she or he has been involved in an accident, that the car is a write off and he or she is in hospital. The *words* you hear trigger a *mental picture* of the event which is likely to be disturbing. Then, depending on how vividly you *imagine* or *picture* the event, you are likely to *feel very emotional*.

The degree to which we vividly *imagine* an experience and *feel* that experience happening in our imagination, is stored in our subconscious as *reality*, or *what actually happened*. Remember, the subconscious does not know the difference between *what is real* and *what we imagine is real*. So, in our subconscious:

Our 'reality' is the product of our imagination and how vividly we imagine.

The more intense the experience, the more vivid the picture we imagine and the more intense the emotion associated with the experience. The result is that once a vividly imagined experience is

recorded in our subconscious, it remains there until we decide to get rid of it. To do this, we have to make an effort to *displace it* and '*put it out of our mind*'.

8.7. Self-Image, Visualising and Affirming

Although our conscious mind is very aware of what happened yesterday and what is going on right now, the subconscious mind is not. The subconscious is timeless. We make value judgements in our conscious mind, but the subconscious cannot discriminate good or bad, true or false. If we input misinformation, the subconscious stores it to affect our decision-making and performance until the information is replaced.

The subconscious mind stores whatever information we care to put into it, whether true or false. It records whatever attitudes and opinions, good or bad, we form about ourselves and others.

Our self-image is the accumulation of all the personal thoughts, beliefs, convictions and attitudes we have acquired from our experiences in life and which is stored in our subconscious. Self-image is the controlling factor in how we behave because we act as we see ourselves to be.

If we record negative attitudes and opinions about ourselves relative to our abilities, we develop a poor self-image, act it out with bad habits and severely limit our performance and potential for success.

Our subconscious is tremendously powerful. It can work for either constructive or destructive personal goals. It is not concerned with whether or not we are acting in our own best interests. It works totally impersonally to bring into reality our self-image, regardless of our true potential.

We must ensure our self-image is an asset. We can use the power of our subconscious to make it so. The most powerful mental techniques we have at our disposal for doing this are visualising and affirming in the context of realising the benefits of passionately desired personal goals. Visualising and affirming are very important components of the goal-setting and goal-tracking processes.

If we choose to make changes in our self-image, we utilise our self-talk and imagination, making very sure we are being very positive about what we intend to do. That is, we must have a worthwhile personal or professional goal to achieve. We repeatedly tell ourselves we are what we want to be, and imagine our desire as vividly as we can with all the passion we can muster.

The mental processes associated with imagery or visualisation engage bodily and emotional abilities because when we imagine things we can involve all sensory modes: sight, hearing, smell, touch, taste and the kinaesthetic or muscle sense (Achterberg and Lawlis, 1980, 1982). Visualising improves memory and is an effective substitute for actual practice at performing some activity; it also appears to under-pin deductive reasoning (Kosslyn, 1985). Visualising is also essential for maintaining situational awareness, recognised as an essential pre-requisite for the safe

operation of any complex system (Isaacs, 1996). So get into the habit of using your built-in video, your imagination, to visualise what you desire, or want to be.

8.8. Personal Affirmations

We can control our performance by modifying our self-image. We know that it will take time to improve and perform better. The key to this self-improvement is appropriate and sustained self-talk, ie, words expressed as affirmations.

A personal affirmation is a statement you make to yourself which describes your condition as it will be after you have achieved a personal goal. Vividly imagining the benefits of achieving your passionately desired personal goals and affirming how you will be after you have achieved those goals, will bring about the feelings and emotions which over time, modify self-image.

We do not want a negative self-image, so we deliberately utilise self-talk to affirm ourselves, progressively to build a positive self-image and induce good, productive, positive attitudes and habits. Visualising what we want to achieve or how we want to be, and affirming self-talk go hand in hand.

A useful, practical definition of a habit (Covey, 1989), is the intersection of knowledge, skill and desire, where:

- *Knowledge* is the *what to do*, and the *why*;
- *Skill* is the *know-how to do*; and
- *Desire* is the *want to do*, or the **motivation**.

To practise good habits we have to have and blend all three, and in particular, must want to and sincerely desire to acquire the habit. A passionate desire to improve oneself is very important in the self-talk ‘words - pictures - emotions’ process if the result is to be better, more effective habits. So the more passion we can put into our self-talk the better.

To summarise:

- The subconscious mind does not know the difference between something real and something we imagine as real.
- We do neither need actually to hear comments and talk, nor actually to experience incidents and situations for them to be recorded as ‘true information’ in our subconscious.
- Our attitudes and habits originate from our self-talk which profoundly affects our self-image. Our self-image is the controlling factor in how we behave because we act as we see ourselves to be. We see what we expect to see, hear what we expect to hear and think what we expect to think.

- We can change negative attitudes and bad habits by utilising the power of the subconscious to visualise and affirm in the context of the benefits of passionately desired personal goals.
- When we decide to make a change of any kind in our lives, we need to set a personal goal. Only then can we change our self-talk to modify our self-image, realise the self-fulfilling prophecy and bring about the reality of whatever it is we sincerely desire.

If business managers (and family managers - mothers and fathers) are to use such comments appropriately, ethically and successfully, they must understand the principles of reinforcement theory and techniques such as behaviour modification and contingency management. McGregor (1996) asserts that a thorough awareness and understanding of how the laws of operant and respondent conditioning apply is fundamental to the study of accident prevention.

After listening to others talking, both socially and in business, you may find it illuminating to learn just how negative people can be, and how unaware they are of it. It could be that you will become more conscious of how many times you affirm, or do not affirm, your own personal aspirations with your own self-talk.

Our self-talk and the mental imagery that goes with it are really nothing more than habits we have picked up over the years. These processes definitely do control our self-image and performance. Controlling self-talk and imagination is essential in building self-image, self-esteem and personal creativity.

Competent managers, concerned with health and safety issues, must be able to mount and sustain goal directed effort embracing behaviour modification and social learning at one end of the Burrell and Morgan continuum through to visualising and affirming at the transcendental end.

8.9. Creativity and Creative Problem-Solving

Creativity and creative problem-solving is described as:

“A distillation of aspects that define creativity is provided by MacKinnon (1967) who postulated that creativity must fulfil at least three conditions: ‘(1) A novel response, (2) that is adaptive to reality, and (3) is elaborated; the idea is developed to the full.’ ”

(Williams, 1978)

“A great scientific discovery or a great work of art is surely the result of problem-solving activity. The solution to a problem, we are told, often comes to thinkers in a ‘flash of insight’, although they may have been turning the problem over in their minds for some time. As problem-solving behaviour, these creative acts are based on a tremendous amount of previously acquired knowledge. ... Many creative thinkers testify that they have previously immersed themselves deeply in the subject matter of the problem, often over considerable periods.

*... The act of **d**iscovery, even in the relatively predictable sense that it occurs in every day learning, involves a 'sudden insight' which transforms the problem situation into a solution situation. ... Every day **d**iscovery also requires that the learner has previous knowledge of the rules involved in the solution.*

*... What has learning to do with creative discovery? The most obvious and dependable answer is that **D**iscoveries of great social importance have been made by people with a great store of intellectual skills."*

(Gagné, 1974)

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

"Although there is a belief that the right side of the brain is responsible for generating the insights that are viewed as creative, both types of thinking, intuitive and rational, using both hemispheres, are necessary for the production of creative thought. The cultivation of creativity must involve development of both modes of processing information to facilitate both right-brain and integrated styles of thinking."

(Ferguson, 1992).

Thorough preparation is essential for creativity and creative problem-solving, whether or not the problem-solution or discovery starts with a small '**d**' or a big '**D**'.

Rowe (1997) says creative thinking and critical thinking are not of the same kind as thinking in day-to-day problem-solving and decision-making:

"Critical and creative thinking add an extra something - quality. As we solve a problem or make a decision we do it more or less creatively, more or less critically.

*... People tend to view critical and creative thinking as opposites: critical thinking evaluates ideas and actions that creative thinking has generated. Yet, the two types of thinking are not opposites, they complement each other and even share many attributes. All **good** thinking involves the assessment of quality and the production of novelty. Critical thinking generates ways to test assertions, creative thinking examines newly generated thoughts to assess their validity and utility. The difference is not one of kind but of degree and emphasis."*

All worthy, valued results stem from two creations; the 'first creation' originates from carefully crafted Personal Governing Ideas - Personal Vision, Mission or Purpose and Values - and the

aspirations that one's governing ideas control. The 'second creation' is concerned with turning one's aspirations into reality.

"What matters most in developing the rapport between our normal awareness and the subconscious is the genuine caring for a desired outcome, the deep feeling of it being the 'right' goal toward which to aspire.

The subconscious seems especially receptive to goals in line with our deeper aspirations and values. According to some spiritual disciplines, this is because these deeper aspirations input directly to, or are part of, the subconscious mind."

(Senge, 1990).

Creative problem-solving is the process which results in an illuminating "Aha" experience. The process occurs in the subconscious. According to depth-mind practitioners, the natural creative process (cf., Wallas, 1926) moves from conflict to incubation to illumination and implementation:

- **Conflict** occurs when our perception of a problem situation does not match our experience stored in our subconscious (our knowledge-base).
- **Incubation:** the problem is presented to the subconscious (knowledge-base) which begins to piece together a solution.
- **Illumination:** a *creative intuition* provides an "**Aha**" solution to the problem, usually when we are relaxed.
- **Implementation:** the most important step is how to implement the idea. The answer to "**how to do it?**" arrives as a second creative intuition.

Benner (1984) asserts that intuitive grasp makes effective decision-making possible. Intuitive grasp relies on perceptual capacity based on prior experience; it is the subconscious apprehension of a situation based on a background of similar and dissimilar situations and internalised as know-how. This internalised know-how is a structured knowledge base of education, training and experience - a knowledge base relevant to past situations stored as patterns of information in long term memory. Thus, the 'gut-feel' of seasoned professionals is meaningful, while the 'gut-feel' of novices is not.

"Intuition in management has recently received increasing attention and acceptance, after many decades of being officially ignored. Now numerous studies show that experienced managers and leaders rely heavily on intuition - that they do not figure out complex problems entirely rationally."

(Senge, 1990)

The properties of human long-term memory or knowledge base are: that humans utilise their personal knowledge base unconsciously; that it is apparently unlimited; that it is fast, effortless and powerful; automatic in operation; and characterised by two basic heuristics. The two basic

heuristics humans utilise are: similarity-matching, which is matching current information inputs in working memory with information stored in long-term memory or knowledge base, and frequency-gambling, which is resolving multiple matches in favour of the most frequent items in one's knowledge base.

“Such fundamental aspects of experience as the degree of likeness between events and their frequency of prior occurrence have been termed intuitive concepts. Similarity and frequency information appear to be processed automatically without conscious effort, or perhaps even without awareness, regardless of age, ability, cultural background, motivation or task instructions. There is a strong case for regarding them as being the computational primitives of the cognitive system.”

“The cognitive system is disposed to select contextually appropriate, high frequency responses in conditions of under-specification, and this tendency gives predictable form to a wide variety of errors.”

(Reason, 1990)

It is very important that regulatory authorities and controlling agencies responsible for specifying human performance standards produce occupational competency specifications that can be shown to be statistically valid. Human errors at all performance levels, rooted in cognitive under-specification, are reduced by valid competency specifications generated by occupational needs assessment.

8.10. Psychological Drive and Energy

Competent people know where they are going in life and how they will get there. If individuals do not have meaningful governing ideas on which to base written goals and an action-plan and thus generate a sense of direction, how do they know when they are off track and when they have achieved their goals. Managers who have a clear sense of purpose and are single-minded about achieving the personal and business goals they have agreed with the people in their teams are those who lead in safe, productive organisations.

Four basic needs or wants seem to get a lot of people going: profit, pleasure, pride and protection. When these people can visualise the benefits of satisfying these as a result of achieving passionately desired personal goals, then the subconscious will provide the desire, drive, energy, or motivation, to help them do so.

There has been an international movement toward ethical behaviour in business for some time:

“Social responsibility and social responsiveness on the part of business are providing the matrix out of which the practice of modern business ethics has emerged. There are two dominant concepts: one expressing the contemporary social expectations of business, the idea of ‘stakeholders’, and the other articulating the response of business to its newly defined role in society, the idea of ‘corporate culture’. The ‘stakeholder’ concept contrasts with that of ‘stockholder’ to indicate that many more people than shareholders have a stake in the behaviour of a business. They include not only a

company's personnel, but also customers, its suppliers and the local, national and in some cases the international community.

Corporate culture is an attempt on the part of a corporation to create an atmosphere and a living tradition of human and social values within which its activities are regularly reviewed, and to which it can refer, not only as evidence of social good faith, but as an honest expression of what it stands for - and what it will not stand for."

(Mahoney, 1988).

"There is an ethical base to the huge majority of enterprises. It is not possible to sustain long-term relationships with customers, staff, suppliers, legislators and shareholders without it. An unethical base can take you forward for some years, ... but in the end there is always a reckoning-up of all stakeholders."

(Garratt, 1996)

Company directors, chief executives and managers at all levels in an enterprise must be sincerely concerned to perform ethically in business.

People with high levels of personal mastery:

- **are committed to the truth;** the subconscious operates most effectively when it is focused clearly on our vision and our current reality;
- **make clear choices;**
- **focus on the desired result,** not the process or the means they believe is necessary to achieve that result;
- **tend to practice some form of 'meditation'** when working with the subconscious. Insights and creative shifts in perspective usually occur during the dream-like state associated with deep relaxation (Ferguson, 1992). It is easier, while focusing on the benefits of achieving personal goals in a quieter state of mind, not to distract the subconscious with irrelevant information.
- **"Sharpen the Saw"** (Covey, 1989; 1990). They regularly exercise the four dimensions of the human personality - physical, mental, emotional and spiritual - for self-renewal. The pace of change and generation of new technological knowledge is accelerating so rapidly that we are advised totally to upgrade our education and training every 5 years or so.

To summarise, 'depth-mind' practitioners advise the subconscious mind has three functions:

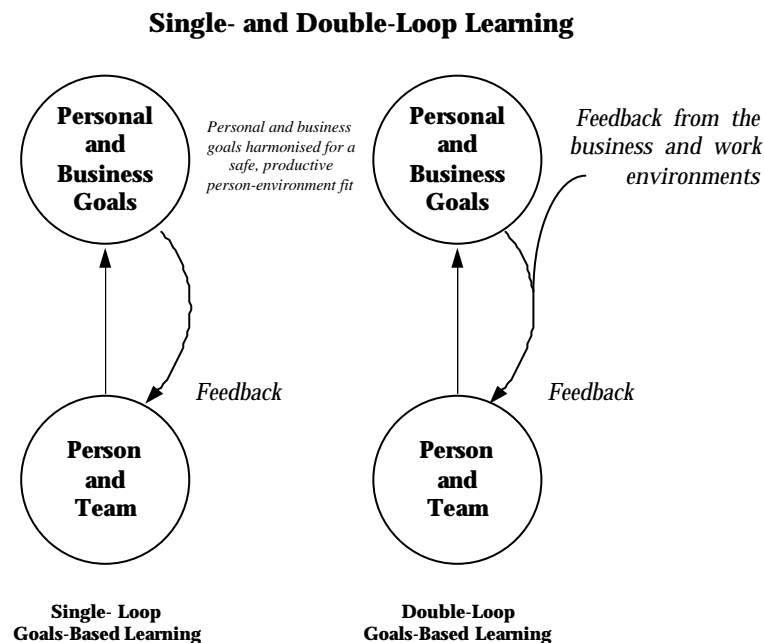
1. It maintains your reality by making you act like the persons you see yourself to be. How you see yourself is based on your current perception of the truth and reality as you record it from your subjective interpretation of the world.

2. It creatively solves problems for you. This is the process which often results in an illuminating “Aha” experience. Natural creativity has been defined as the ability to solve a problem or conflict and then to realise a creative solution. The natural creative process in the subconscious is conflict to incubation to illumination and implementation.
3. Finally, it provides psychological drive and energy, or the motivation to resolve conflicts or accomplish goals.

9. THE RESEARCH IN ORGANISATIONAL SCIENCE, MANAGEMENT AND LEADERSHIP

Although the term depth-mind is replaced by knowledge base in the management literature, there is a marked similarity between depth-mind approaches to human performance and contemporary approaches based in cognitive science. Depth-mind techniques are still widely utilised for personal and business development programs, particularly in the USA where goal-setting is the norm for professional people.

The research shows that visualising in the context of personal and business goals is essential for maintaining situational awareness. The research also shows that effective goal-setting and goal-tracking has a powerful effect on motivation and is pre-requisite for single- and double-loop learning. But most depth-mind programs focus on single-loop learning, adequate in more stable times, but not powerful enough for the volatile environments that challenge contemporary business. Double-loop learning is necessary for generative learning and organisational capability in learning organisations.



Cognitive science methodology is increasingly utilised for investigating the nature of competent human performance. Dismukes (1994), an aviation psychologist from NASA-Ames, USA, in a major survey of universities in the USA pursuing research into aviation human factors, finds that:

“... a deep understanding of human cognitive processes is required to answer many of the practical issues raised by automation of the flight deck, such as how to keep the crew in the loop, how to aid decision-making and how to minimise human error.

The emergence of cognitive science over the past three decades has revolutionised behavioural science and provided new insight into how humans obtain, organise, process, store and retrieve information (Simon, 1990). For instance, human experts performing complex tasks have been shown to assess situations and reach decisions using heuristic processes of optimal decision making (eg., Kahneman, Slovic and Tversky, 1982; Klein, Orasanu, Calderwood and Zsombok, 1993).

Another implication of modern cognitive science is that human error among highly skilled, strongly motivated individuals such as aircrew members is only rarely explained by carelessness and more commonly is a product of systems and procedures mismatched to the mechanisms of human information processing (Rasmussen, 1986; Reason, 1990; Woods, Johannesen, Cook and Sarter, 1994).”

“... cognitive science has emerged in recent times as a powerful new approach to understanding the mechanisms that underlie the skilled performance of experts such as pilots and (air traffic) controllers.”

“... (these) recent developments in behavioural science and computer science offer rich opportunities to study complex human behaviour and system performance in real-world settings such as aviation.”

The main thrusts of current research into human performance inform the required professional standards for safety and productivity. They are:

- the move away from traditional behavioural task analysis to cognitive task analysis (needs assessment) for investigating the nature of expertise and competent human performance, particularly in high risk industries;
- the purposeful design of national socio-technical systems and enterprises for System Safety and organisational learning;
- Managing for Total Quality and a sincere concern for a sustainable environment as essential components of socio-system design and competent human performance.

9.1. Cognitive Needs Assessment not Behavioural Task Analysis

Professional codes of conduct and standards in any industry, particularly those performing in high-risk environments, must be derived through cognitive task analysis (occupational needs assessment) rather than traditional, behavioural task analysis.

Currently, the New Zealand Education and Training Support Agency (ETSA) is propounding the need to develop human capability. Needs assessment should specify standards of occupational

performance, with which modern electronic instructional delivery and evaluation systems can be developed to meet national and industry demands for cost-effectiveness, credibility and relevance in occupational education and training.

The arrays of capability skills that underpin safe, productive occupational performance comprise the generic knowledge base for an occupational specialisation. Occupational knowledge bases are relatively stable, changing slowly as the nature of occupational expertise changes with the creation of new knowledge. The stable capability skills enabling competent occupational performance, enable the completion of a changing variety of job tasks which, with the volatility and rapid change in the nature of work, are quickly 'turned over', soon becoming obsolete. For practical purposes, occupational knowledge-bases are stable, but job tasks are not. It is now possible to identify the nature of occupational knowledge bases by occupational needs assessment (Hunt, 1986, 1997).

Perhaps the most far reaching recent development is that organisations can now be purposefully designed and managed to reduce the risk of organisational accidents (Reason, 1990, 1997; Maurino et al., 1995). The *Human Factors Digest No 10, Human Factors, Management and Organisation*, published in 1994 by ICAO, the International Civil Aviation Organisation noted that:

"Because of constant technological progress, major equipment failures or operational personnel errors are seldom the root cause of breakdowns in system safety defences. Instead, these breakdowns are the consequence of human decision-making failures which occur primarily within managerial sectors."

The risk of organisational accidents is reduced in learning organisations that are also concerned with managing for total quality and a concern for a sustainable environment as essential components of system design and safe, productive human performance.

In the long term safety is the same as productivity. In the short term, balancing safety goals and productivity goals can be challenging for senior management.

"Systems accidents have their primary origins in fallible decisions made by designers and high-level managerial (corporate or plant) decision-makers."

(Reason, 1990)

.

“TOP TEAM” ALLOCATES RESOURCES TO BALANCE PRODUCTIVITY AND SAFETY
(Reason, 1990)

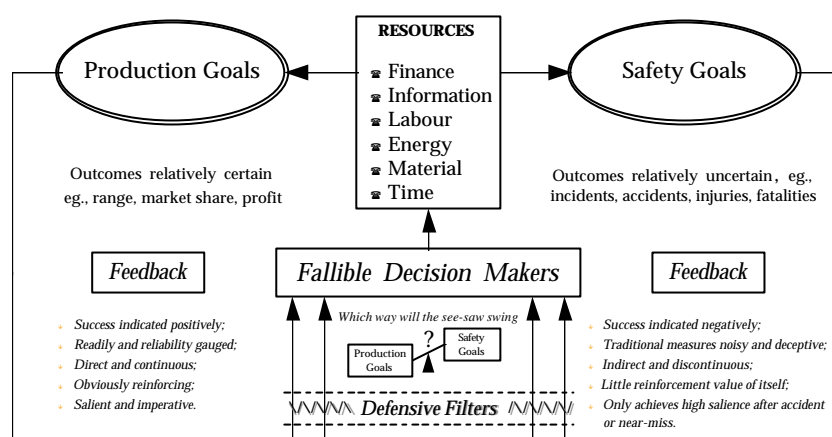


Figure 9 Relationship between management practices and safe performance

‘Top teams’ allocate resources with safety in mind, but also they must balance production and safety goals. When making these judgements fallible decisions seed the latent failures that cause organisational accidents.

9.2. Management and Leadership: The Modern Context

This section describes in detail the management practices now naturally associated with the organisational approaches to safety described in the main body of this report, and provides an overview of the theory and research from organisational science that underpin these approaches.

“It is striking to note how rarely leadership is associated with business.” (Zaleznik, 1990).

“A well managed business does not necessarily contain within it the seeds of progress. The organisation may be perfect, the methods impeccable, the conditions ideal; but without that extra something so hard to define yet so potent, today's success might quickly turn into tomorrow's failure.” (Falk, 1988).

“After World War 2, America's and Europe's veterans exchanged their military uniforms for factory overalls and grey flannel suits. But the bureaucratic, authoritarian military model from the 19th century remained the organisational system by which they governed themselves” (Naisbitt and Aburdene, 1990).

9.3. Management Practice Post World War 2 (WW2), and the Military Metaphor

Management practice after World War 2 was strongly influenced by the ‘man-management’ techniques of successful military leaders. Civilian organisations were structured, ‘recruited’ and ‘manned’ according to military practice with ‘line’ and ‘staff personnel’. These tall, mechanistic pyramids tended to be managed by retired male officers (many still using and relishing their military titles), who ‘established’ formal ‘chains of command’ characterised by a ‘span of control’ of “*no more than five or six subordinates whose work interlocks*” (Urwick, 1938; Graicunas, 1947) and many decision making levels. “*Fog horns down, filters up*” and “*corrupt signals*” or message distortion (Krivonos, 1984) flourished in European and North American companies. Trade union ‘officers’ in the UK contributed with phrases describing their worker ‘cadre’ as ‘rank and file’.

The military metaphor prevailed, and according to Peters and Waterman (1984) was persisting. ‘Task forces’ are still ‘formed up’ and even now, people are ‘marched under escort’ to the door in case they ‘sabotage’ the company whether or not they have been ‘discharged honourably’ or ‘dishonourably’.

Weick (1976) says:

“Chronic use of the military metaphor leads people repeatedly to overlook a different kind of organisation, one that values improvisation rather than forecasting, dwells on opportunities rather than constraints, discovers new actions rather than defends past actions, values arguments more highly than serenity and encourages doubt and contradiction rather than belief.”

However military purposes and goals differ markedly from commercial purposes and goals. The ‘right stuff’ for military operations is not necessarily the ‘right stuff’ for commerce (Wolfe, 1979; Foushee, 1981). Yet the modern military, land, sea and air, has been the source of many fine examples of empowering leadership in recent times. However, if military metaphors are now being overturned, they have been replaced by new jargon for civilian managers to come to terms with: ‘*skunk-works, sailing, playfulness, foolishness, see-saws, space-stations, garbage cans, marketplaces and savage tribes*’ (Peters and Waterman, 1984). There is also the emerging jargon of the ‘learning organisation’.

Looking to the future, Handy (1996) wrote:

“The newly emerging language of organisations is very different. The talk today is of ‘adhocracy’, of federalism, of alliances, teams, empowerment, and room for initiative. The key words are options, not plans; the possible rather than the perfect; involvement instead of obedience. This is the language of politics, not of engineering; of leadership, not of management. It is therefore interesting to observe how organisations are dropping

the title of manager and replacing it with terms such as team leader, project coordinator, lead partner, facilitator, or chair. Soon we shall see political theory take its rightful place as a core course in our business schools. It will be a recognition, at long last, that organisations are communities of individuals, not arrays of human resources.”

Managers in the 1950s had their WW2 ‘armoury’ of military leadership training and experience to utilise. It had worked well in war so why should it not work in peace? Their ‘troops’ were the same and were well versed in it. Such attitudes and the relatively stable, socio-economic-political environments of the time generated inflexible, mechanistic, machine bureaucracies.

Companies often hold on to flagrantly faulty assumptions about their environments for as long as a decade, despite overwhelming evidence that their world has changed and they probably should change as well (Pettigrew, 1973; 1976). Organisations adapt and learn ‘v-e-r-y slowly’ (Weick, 1976). People, by and large, prefer to maintain the comfort and predictability of the status quo. In this way, they are better able to protect their personal interests.

Many machine bureaucracies still exist in New Zealand where a management style of ‘autocratic paternalism’ was still to be found in the late 1980s without much effort (McClennan et al., 1987). Post World War II corporations in the Western World were created by men for men and ‘Godszone’ was no exception.

9.4. The Need for Leadership in an Era of Discontinuity

The circumstances of organisational management have drastically changed. Limerick and Cunningham (1993) list the events that:

“swept through Western organisations and society in the 1980s: the 1982 recession; the collapse of the stock market; Bob Geldorf’s Band Aid, with famine relief to Ethiopia; the rapid development of information technology; the formation of global markets; the increasing use of off-shore manufacturing; the rise - and fall - of television evangelists; the rise of People Power in the Philippines; the rise of People Power in Eastern Europe and the fall of the Berlin Wall; the decentralisation of organisations; the downsizing of organisations; middle-management wipe-out; the emergence of broad-banding and multi-skilling; user-pays principles in public-sector organisations; the focus on vision, mission and corporate culture; the emergence of multi-national corporate strategic alliances; the focus on transformational leadership; the popularity of New Age thinking; the emergence of Young Urban Professionals (‘Yuppies’).”

These events reflect the revolutionary paradigm shift that led Ansoff (1990) to classify the environmental turbulence experienced by organisations on a continuum from repetitive through expanding, changing, discontinuous to surprising. Today’s increasingly confused managers and

their bewildered people face surpriseful, discontinuous change because what they've experienced in the past does not prepare them for the future.

We now live and work in an unpredictable, *surpriseful*, **Era of Discontinuity**. The world has moved rapidly from an Industrial to a Post Industrial Society characterised by:

- an accelerating movement from manufacturing to service industries based on information, communication and knowledge;
- the emergence of centralised banks of information;
- the rise of an elite meritocracy in the information and communication industries.
- more information networks connecting people globally, faster and better communication and transportation.
- international economic integration: fewer tariffs, currencies linked by floating exchange rates and more global capital flows.
- the maturation of markets in developed countries: slower domestic growth, more aggressive exporters and more deregulation.
- the fall of communist and socialist regimes: more countries linked to the capitalist system and more privatisation.

The nature and meaning of work and leisure are changing. Organisation structures are flattening as the elite meritocracy take advantage of information technology and the information explosion.

Since WW2, the number of working women has increased (in the USA and Europe) by 200%. In sheer numbers professional women dominate the information society. The days of women as some sort of minority in the work force are over.

“If the male was the prototypical industrial worker, the information worker is typically a woman.”

“The jobs of people in the information, service, finance, computer, bio-technology, and health-care sectors are not performed on an assembly line and cannot be managed as though they were. It is almost impossible to ‘supervise’ information work. Mental tasks have replaced mechanical ones. ‘Work’ is what goes on inside people’s heads at desks, on aeroplanes, in meetings, at lunch. It is how they communicate with clients, what they write in memos, what they say at meetings.” (Naisbitt and Aburdene, 1990).

The turbulent socio-economic environments anticipated in *An Age of Unreason* (Handy, 1989) and *Megatrends 2000* (Naisbitt and Aburdene, 1990), will challenge all who value human beings as the most important resource there is. The nature of organisations and the way people are ‘managed’ must change to meet this challenge.

“The dominant principle of organisation has shifted: from management (once needed in order to control an enterprise) to leadership (now needed in order to bring out the best in people and to respond quickly to change) ... Outside the military management

model, men and women are equally capable of inspiring commitment and bringing out the best in people.” (Naisbitt and Aburdene, 1990).

9.5. Directions In Leadership Research

Managers in the two decades after WW2 tended to base their leadership style on universal theories - *‘there is one best way to lead’* - which included the *‘qualities and traits’* approach. But Adair (1984) observes that no one yet has been able to agree what constitute the *‘qualities’* or *‘traits’* of leadership that will give humans dominion over their fellows in any situation in which they find themselves. This lack of agreement is demonstrated by the *‘qualities’* of good leadership listed by US, British and Canadian military experts in the 1950s and 1960s

One finding from the leadership research (Fiedler and House, 1988) is that:

“There is no one ideal leader personality. However, effective leaders tend to have a high need to influence others, to achieve, and they tend to be bright, competent and socially adept, rather than stupid, incompetent and social disasters.”

9.6. Transactional and Contingency Theories of Leadership

The period 1950 to the 1970s spawned transactional and contingency theories of leadership (Fiedler and House (1988).

Transactional theories are concerned with the *‘transactions’* between leader and the group, and with the leader behaviours which enabled group members to gain rewards by doing what they were required to do by the organisation.

“Transactional leadership occurs when one person takes the initiative in making contact with others for the purpose of an exchange of something valued.” (Burns, 1978).

Research interest in transactional theories of leadership remains strong. Perhaps this is because most managers are currently operating at this level.

Contingency theories identify the situations in which specific leadership styles will be most successful. Well known examples are Fiedler’s *‘leader-match’* model (1967), House’s *‘path-goal’* theory (1971, 1977), and Hersey and Blanchard’s *‘situational’* theory (1982).

Since the late 1970s, researchers have shown increasing interest in such cognitive issues as the leader's judgement, perceptions, intelligence, competence and experience in determining leader-follower relations and performance. For example:

“Intellectual abilities and experience contribute highly to performance only under selected conditions. Research is very clear in showing that experience correlates with performance only under conditions of stress, while intelligence tends to correlate with performance only when stress experienced by the leader is relatively low. Whether leader intelligence or experience is required is determined by the task and the environment.” (Fiedler and House, 1988).

The nature of *experience* as a relatively stable *knowledge-base* linked to *expertise*, and in the context of performing under conditions of stress will be discussed later in the paper.

Adair's Functional Leadership model (for the military) alias Action Centred Leadership (ACL) (for civil business) is a practical blend of leadership theory which has a history of successful application over 35 years:

“Competent leading is the dynamic process of being aware, as an individual, of the task needs, team maintenance needs and individual needs of the group of which s/he is a member, and actively and successfully demonstrating the abilities to meet those needs in accordance with the priorities of the situation.” (Adair, 1973).

According to Robbins and Mukerji (1990), path-goal theory (House, 1971; Boone and Bowen, 1987) is the *dominant focus of investigation*” by leadership researchers. House asserts:

“It is the leader's job to help his or her followers attain their goals and to provide the necessary direction and/or support to ensure that their goals are compatible with the overall objectives of the organisation.”

In other words, the leader-manager, seeking to achieve a productive balance between private and business affairs for the individuals in his or her team, ensures that the personal aspirations of each individual match the aspirations of the team and thus the aspirations of the organisation.

Path-goal theory embraces major facets of Fiedler's work and that of Hersey and Blanchard. For example, the effect of leader behaviour on performance is moderated by environmental factors such as authority and by task structure (Fiedler); and by characteristics of group members, such as the extent to which they feel in charge of the situation and the amount of their relevant experience (Hersey and Blanchard).

9.7. Transformational Leadership: The Leader-Manager And The Learning Organisation

Rapidly accelerating change is affecting the structure of organisations; they are becoming flatter. The nature and meaning of 'work' and 'leisure' is changing. Relationships between managers and workers in flatter, dynamically networked organisations are changing. Thus the development and application of leadership theory in the world of work will change. In which direction is it likely to go?

Naisbitt and Aburdene (1990) advise: *"Business leadership must win loyalty, achieve commitment and earn respect."*

Then, Fiedler and House, (1988) advise that research into charismatic, transformational leadership is emerging after 80 years of relative obscurity. Limerick and Cunningham (1993) write:

"In view of the rate and kind of change occurring in organisations today, it is understandable that current management literature should focus on transformational leadership. The move from Third to Fourth Blueprint organisations involves a quantum change in organisational strategy, structure and culture. Changes towards such organisations therefore cannot be accomplished in an incremental fashion; they are, axiomatically, transformational."

Transformational leaders create new situations and processes; transactional leaders work by increment."

9.8. Managers as Empowering, Transformational Leaders

Empowering, a leadership concept, is an essential managerial capability for creating what Senge (1990) calls learning organisations. Empowering is a process that is concerned with "strengthening an individual's beliefs in his or her sense of effectiveness." (Conger, 1990).

Bowen and Lawler (1992), define empowerment as:

"sharing with front-line employees four organisational ingredients:

- (1) information about the organisation's performance,*
- (2) rewards based on the organisation's performance,*
- (3) knowledge that enables employees to understand and contribute to organisational performance, and,*
- (4) Power to make decisions that influence organisational direction and performance."*

In their paper, Bowen and Lawler (1992) give managers useful advice on why, how and when to empower.

Argyris and Schön, (1978) say managers must be able to *empower* the people in their teams, individually and collectively, for adaptive and generative learning. In this way the organisation's

culture and communication climate will foster the creativity and end values critical for developing the enterprise.

Hill et al., (1998), in the context of skill formation and organisational learning in New Zealand, find that empowerment to act is central to an organisation's 'ability to learn'.

"Empowerment entails giving people:

- (1) the authority to act;*
- (2) the information and access to technology they require;*
- (3) Designing work, technologies and processes in order to build in opportunities for continuous work-based learning;*
- (4) Supporting this learning with access to appropriate external courses as required."*

In Senge's opinion, (1990):

"Our traditional view of leaders - as special people who set the direction, make the key decisions, and energise the troops - is deeply rooted in an individualistic and non systemic world-view.

Epecially in the West, leaders are heroes - great men (and occasionally women) who rise to the fore in times of crisis. ..So long as such myths prevail, they reinforce a focus on short-term events and charismatic heroes rather than on systemic forces and collective learning."

(Senge, 1990).

Senge captures the gap between old and new - the age old notion of heroes who rise to the occasion and save the day, versus the emerging idea of empowering leaders who are able continuously to facilitate and transform their people.

Managers must now focus on becoming transformational leaders emphasising collective learning in learning organisations.

Senge's point reflects to an extent, the leadership research and theories selected and reviewed by Fiedler and House (1988):

"... at opposite ends of the rational-emotional continuum of leadership, those which deal with cognitive aspects and those which deal with the affective and motivational aspects of leadership, that is, the highly affect-laden and motivational variables inherent in charismatic and transformational leadership."

But the charisma, 'instant' in many cases, demonstrated by heroes who rise to the occasion and save the day, is but a spark compared to that displayed consistently by empowering, transforming leaders. House (1977) describes charismatic, transforming leaders as those who:

"... by force of their personal abilities are capable of having a profound and extraordinary effect on followers.

... *by their influence are able to cause followers to accomplish outstanding feats.*"

Bass (1985), in the context of organisational management, argued that charismatic, transformational leaders:

"attempt and succeed in raising colleagues, subordinates, followers, clients, or constituencies to a greater awareness about the issues of consequence. This heightening of awareness requires a leader with vision, self-confidence and inner strength to argue successfully for what he [sic] sees is right or good, not for what is popular or is acceptable according to established wisdom of the time."

In organisations, charisma stems from advocacy for the future (Conger and Kanungo, 1987). Transforming leaders are competent communicators. Fiedler and House (1988) observe that:

"Charismatic or transformational leadership is not a mysterious process, but the result of such clearly identifiable behaviours as the articulation of transcendent goals, demonstration of strong self-confidence and confidence in others, setting a personal example for followers, showing high expectations for followers performance, and the ability to communicate one's faith in one's goals."

Since the late 1970s, researchers have turned their attention to the nature of transformational leadership. Transformational leaders instil visionary purpose and inspire and empower followers to transcend daily affairs in pursuit of this vision.

"Leadership over human beings is exercised when persons with certain motives and purposes mobilise, in competition or conflict with others, institutional, political, psychological and other resources so as to arouse, engage and satisfy the motives of followers. Leadership, unlike naked power wielding, is thus inseparable from followers' needs and goals."

... *Transforming leadership occurs when one or more persons engage with others in such a way that leaders and followers raise one another to higher levels of motivation and morality. Their purposes, which might have started out separate but related, in the case of transactional leadership, becomes fused. Power bases are linked, not as counter-weights but as mutual support for common purpose.*

... *Transforming leadership ultimately becomes moral in that it raises the level of human conduct and ethical aspirations of both the leader and the led, and thus has a transforming effect on both."*

(Burns, 1978).

Transformational leadership is practised to benefit the enterprise and its people:

"The institutional leader is primarily an expert in the promotion of values."

(Peters and Waterman, 1984).

The transforming leader-follower relationship is symbiotic. Transforming leaders facilitate and empower in the context of an inspiring future vision. They generate believability, excitement and infuse 'end' or 'core values' that cannot be negotiated or exchanged between individuals, eg., integrity, honour and justice. Covey (1989; 1990), recommends 'character-ethic principles', fundamental truths that have universal application, eg., fairness, honesty, human dignity, human potential for growth, nurturing, patience, service and Quality.

Field Marshal The Viscount Montgomery of Alamein, an eminently successful military leader in WW2, stressed the need for a common transcending purpose, for ethical leadership and for competent motivating, decision-making and communicating:

"The beginning of leadership is a battle for the hearts and minds of men. Leadership is the capacity and the will to rally men and women to a common purpose and the character which will inspire confidence. It is 'captaincy' which counts, or leadership in the higher sense, together with the power of decision and an understanding of human nature; in fact a leader must first understand, and then decide, and act. And he must be articulate; he must be able to express himself in clear and simple language." (Montgomery, 1961).

Montgomery, recognised by his peers and subordinates as a charismatic leader, also recognised the importance of end values, stressing the need for leaders to possess the four cardinal virtues: prudence, justice, temperance and fortitude (Adair, 1984).

Field Marshal Lord Slim, another eminent military leader, describing how he successfully met the need to engender high morale in a great army, stressed the need for **transcendent goals** in the pursuit of a '*great and noble object*', the achievement of which '*is vital*' (Slim, 1956).

9.9. Attributes of the Charismatic, Empowering Leader

Kuhnert and Lewis (1987) say leader-managers transform their people who are empowered to contribute to and share the vision. Bass and Avolio (1990) find that transformational leaders:

- have vision and a sense of mission;
- are individually considerate: they tend to diagnose, delegate and coach;
- are intellectually stimulating; they encourage a new look at old methods;
- are inspirational: they give pep talks and increase optimism.

Then, according to Conger and Kanungo (1987), the charismatic, empowering leader:

- Is a likeable and honourable hero worthy of identification and imitation due to an idealised **vision** and perspectives **shared with followers**;
- Strongly articulates the **future vision** and personal motivation to lead;
- Is essentially **opposed to the status quo** and strives to change it;

- Has a high need for **environmental sensitivity** for changing the status quo;
- Transforms followers to **share the radical changes** advocated;
- Has personal power based on **expertise, respect and admiration** for a unique hero;
- Is **elitist, entrepreneurial and exemplary**;
- Is expert in using **unconventional means** to transcend the existing order;
- Demonstrates **unconventional or counter-normative behaviour**;
- Incurs great **personal risk and cost** by disinterested advocacy;

for the sake of realising an idealised vision highly discrepant from the status quo.

At the roots of empowering leadership then, is a noble, inspiring, future vision for the enterprise which the empowering leader-manager shares and builds with his or her followers.

“An organisational mission statement - one that truly reflects the deep shared vision and values of everyone within the organisation - creates a great unity and tremendous commitment. It creates in people’s minds a frame of reference, a set of criteria or guidelines, by which they will govern themselves. They don’t need someone else directing, controlling, criticising or taking cheap shots. They have bought into the changeless core of what the organisation is about.”

(Covey 1989).

An inspiring Vision shapes the enterprise’s Mission which is attained through setting and attaining Mission related goals. However, in the context of realising a shared vision, dynamic, transforming and intrinsically motivating goals are creatively and jointly set between individuals and tracked to success at all levels of the enterprise.

Transformational leaders motivate their followers to accept and accomplish difficult goals that followers normally would not have pursued (Kuhnert and Lewis, 1987).

9.10. Can Transformational Leadership be Developed?

Fiedler and House (1988) say transformational leadership can be developed. Managers need to learn how to articulate transcendent goals, communicate one’s faith in one’s goals, set a personal example for followers, demonstrate strong self-confidence and confidence in others, and show high expectations for followers’ performance.

In their model of Transactional and Transformational Leadership, Kuhnert and Lewis (1987) show three stages of development characteristic of the level of interpersonal understanding of most adults.

These stages (figure) are: ‘imperial’ (lower-order transactional leadership) through ‘interpersonal’ (higher-order transactional leadership) to ‘institutional’ (transformational leadership) with appropriate Content of Experience and Organising Process.

Content of Experience

Organising Process

Imperial:	<i>Perceptions, immediate needs and feelings.</i>	<i>Personal goals and agendas.</i>
Interpersonal:	<i>Personal goals and agendas.</i>	<i>Interpersonal connections and mutual obligations.</i>
Institutional:	<i>Interpersonal connections and mutual obligations.</i>	<i>Personal standards and value system.</i>

Figure 10 Transactional and transformational leadership

From this constructive/developmental perspective, the perceptual and organising (cognitive) structures of transactional leaders are quite distinct from those of transformational leaders. While the behaviours of leaders may change under different circumstances, the underlying cognitive structures that produce the behaviours are quite stable.

Conger and Kanungo (1987) offer 13 tentative hypotheses focusing on the components of charisma for transformational leadership.

Conger (1989) in defining the stages of the empowering process, adds a word of caution. He thinks some managers may be incapable of empowering others. And Zaleznik (1990) observes:

“... by and large, the tie that binds men and women in organisations today, particularly at the professional and managerial levels, is narrow self-interest, rather than a sense of mutual obligations and responsibilities.”

If this is so, the solution lies with collective, distributed, empowering leadership by executive and management teams right through the enterprise, rather than with charismatic chief executives.

The definition of leadership from the Center for Creative Leadership, (Greensboro, North Carolina), sums up the foregoing:

“Leadership is the process of achieving business objectives through others while not relying on the authority of the management role.”

Kotter (1996) defines the difference between management and leadership thus:

“Management is a set of processes that keep a complicated system of people and technology running smoothly. The most important aspects of management include planning, budgeting, organising, staffing, controlling and problem-solving.

Leadership is a set of processes that creates organisations in the first place or adapts them to significantly changing circumstances. Leadership defines what the future should look like, aligns people with that vision, and inspires them to make it happen despite the obstacles.”

Covey (1996) says the three roles of leaders are pathfinding, aligning and empowering.

Handy (1996) finds an '*unusual combination of attributes*' necessary for successful leadership: a belief in oneself combined with a decent doubt; a passion for the job combined with an awareness of other worlds; and a love of people combined with a capacity for aloneness.

- *"A **belief in oneself** ... gives the self confidence to step into the unknown and persuade others to go where no one has gone before; ... combined with a **decent doubt**, the humility to accept that one can be wrong ... that others have ideas, that listening is as important as talking.*
- *A **passion for the job** provides the energy and focus that drives the organisation and that acts as an example to others; ... combined with **an awareness of other worlds**, because focus can turn to blinkers, an inability to think beyond one's own box. Great leaders find time to read, to meet people beyond their own circle, ... to walk in other worlds.*
- *A **love of people**, because in a community of individuals, those who find individuals a pain and a nuisance may be respected or feared, but they will not be willingly followed; ... combined with a **capacity for aloneness**, because leaders have to be out front. Few will thank the leader when things go right, but many will blame ... if things go wrong. Great leaders have to walk alone from time to time. They also have to live vicariously, deriving their satisfaction from the successes of others and giving those others the recognition that they themselves are often denied."*

Katzenbach (1998) provides seven maxims for executive leaders with what he labels the Executive Leadership Discipline. He finds that successful executive leaders (in the USA):

1. create and maintain urgency;
2. resolve the critical strategic issues;
3. enforce individual accountability;
4. leverage executive time and experience;
5. make the tough decisions individually;
6. pick the best individuals for the key jobs;
7. periodically 'raise the bar'.

9.11. Followers

Leaders can't lead without followers. How can the following component of leadership be exercised? Smith (1996) offers five maxims. An effective follower:

- asks questions instead of giving answers;
- provides opportunities for others to lead;
- does real work in support of others instead of only the reverse;
- becomes a matchmaker instead of a central switch;

- seeks common understanding instead of consensus.

9.12. What is a Team?

Katzenbach and Smith (1993) define the discipline of teams - essential team basics - for what they call a 'real team', as:

"a small number of people with complementary skills who are committed to a common purpose, performance goals and working approach for which they hold themselves mutually accountable."

These five 'team basics' are *"absolutely essential if a working group at any level is to obtain the extra measure of performance results that real teams can deliver."*

Katzenbach (1998) identifies other types of teams and defines them:

- ***"Enabling Team:*** A single-leader working group or organisational unit that interacts to encourage and motivate one another to higher levels of individual performance."
- ***"High-Performance Team:*** A real team whose levels of commitment to its purpose and goals exceed those of all other like groups and whose members are also committed to one another as individuals. This unit is rare, and its members remain committed to one another well beyond any formal team experience."
- ***"Nonteam:*** Any group interaction or behaviour that does not fit the definition of real team; it may or may not achieve a collective purpose."
- ***"Organisational Unit Team:*** The permanent group of direct reports in any unit, program, task force, function, or process. The group is defined by the organisational structure; it may or may not function as a single-leader unit or working group, enabling team, or real team."
- ***"Potential Team:*** A work-group that has yet to discipline itself relative to the 'five team basics' that determine real team levels of performance."
- ***"Pseudoteam:*** A working group that does not recognise any performance purpose to its interactions."
- ***"Team at the Top:*** The senior leadership group of an institution or organisation; synonymous with all of the leader's direct reports."
- ***"Top Team:*** A group of executives who may function as a real team or as a single-leader working group."

- ***“Total Enterprise Team:*** *All members of an enterprise, business unit, or large functional department who develop a high level of commitment to the purpose of the enterprise and whose personal support for one another is beyond that of normal organisational relationships.”*

In Katzenbach’s view, the members of a ‘real team’ going for ‘true performance’:

- are mutually accountable for the team’s results;
- produce collective or joint work of clear performance value;
- share and/or shift the leadership role.

9.13. Interconnectedness of Real Teams for Organisational Learning

Engeström (1992), says working groups, with their meetings and internal dynamics, have a strong tendency of turning inward and encapsulating themselves. Managers must avoid the dangers of group-think (Goldhaber, 1979).

Engeström (1992), acknowledging the work of Ancona (1991) who found teams develop three different strategies towards their environment she called informing, parading and probing, concludes the probing strategy is a precondition for effective networking.

Probing teams emphasise diagnoses of client needs and feedback on team ideas while utilising a high level of two-way communication with the external environment.

Real teams - probing teams - are learning systems. Teams are set up because the potential of individuals working in groups is far greater than if they were working by themselves (Engeström, 1992). Real teams in a learning organisation are interconnected; they are the active nodes in the dynamic network that is the enterprise.

“Networks provide a context for learning by doing. As information passes through a network, it is both freer and richer; new connections and new meanings are generated, debated, and evaluated.”

(Powell, 1990)

Effective, creative networking between real teams is essential for team and organisational learning.

9.14. Personal Competence and Organisational Effectiveness

If company directors, chief executives and managers aspire to become empowering leaders of real teams, what is the nature of the competence, corporate culture and communication climate they must foster? How may organisational effectiveness assessed?

According to Huse and Cummings (1985), effectiveness and efficiency are the ‘*twin concepts of competence*’ where:

- **Effectiveness** means the degree to which pre-determined, measurable goals are achieved; and that,
- **Efficiency** means the extent to which resources are consumed to achieve pre-determined, measurable goals;

in what Barnard (1938) called “*systems of human cooperation*”.

The earliest definitions of organisations stressed the importance of goals as an integral, defining characteristic (Pfeffer, 1981). By definition, to be competent, individuals must work to pre-determined, measurable goals. Competent performance is measurably effective, efficient and safe (Johnson, 1980) with the concept safe embracing physical safety, psychological safety and in bicultural, multi-ethnic communities such as New Zealand, ‘cultural safety’.

Then, because **human error** is associated with intentional activity and failures to achieve goals, the development of competent performance in contemporary organisations must also be addressed in the context of reducing the risk of ‘*organisational accidents*’ and ‘*System Safety*’ (Reason, 1990, 1997).

9.15. Organisational Effectiveness

In an Era of ‘Surprise Discontinuity’ (Ansoff, 1990) the concept of organisational effectiveness (OE) is complex. For example, Garratt (1996) defines OE from the perspective of the director as:

“the external, long-term perception in the customer’s mind of the products or services being desirable and good value for money.”

Robbins and Barnwell (1989) offer an approach and define OE in the context of competing values:

“Competing values acknowledge that multiple criteria and conflicting interests underlie any effort at defining and assessing OE. By reducing a large number of effectiveness criteria into four conceptually clear organisational models, the competing values approach can guide the manager in identifying the appropriateness of different criteria to different constituencies and in different (organisational) life-cycle stages.”

With three sets of competing values in mind: (i) flexibility versus control; (ii) people versus organisation; (iii) means versus ends; Robbins and Barnwell define OE as:

“the degree to which an organisation attains its short and long term goals, the selection of which reflects strategic constituencies, the self-interests of the evaluator and the life-stage of the organisation.”

For enterprises to survive and prosper in contemporary, surpriseful, discontinuous environments, pursuing OE means environmental scanning and attaining goals for double-loop learning. OE depends on who, within and without, is appraising the organisation and what interests they represent. OE depends on the life-stage of the organisation. Then, in Western nations and particularly those that are English-speaking, language structure contributes to the majority of organisations having highly analytical, mechanistic cultures (Senge, 1990). Research into culture (Hofstede, 1980, 1994; Hampden-Turner, 1990, 1992; Trompenaars, 1993) has established that cultures can be understood as patterns of resolving problems and that problems present themselves as dilemmas.

The competing-values approach acknowledges these concepts; it also accommodates dilemmas (Hampden-Turner, 1990) as a growing issue in managing.

9.16. Goal-setting and Goal-tracking

Webster and Starbuck (1987) report that goal-setting and -tracking produced an average performance improvement of 21% in 17 studies conducted from 1969 to 1979. In another study (Locke et al., 1980), goal setting alone produced on average, a 16% increase in productivity.

Miner (1984), Pinder (1984), and Landy and Becker (1990), after reviewing 30 organisation behaviour theories and all the major motivational theories, concluded that:

“Goal setting was one of only four theories that were both valid and useful. Goal Setting Theory has demonstrated more scientific validity than any other theory or approach to work motivation.”

“Goal Setting Theory has the potential for the greatest scope in the context of middle range theories. It is likely that variables such as job performance, job satisfaction, task satisfaction, and effort expenditure are amenable to explanation from the goal-setting perspective.”

9.17. Motivation

To be able successfully to motivate in the modern world of work is concerned with understanding:

- What needs, aspirations, expectations and interests, within a person arouse that person to perform either as an individual or within a group;
- How safe and productive personal performance may be maintained and directed so that the achievement of personal and organisational goals are integrated;
- How the mix of factors in that person's domestic and work environments affect performance;

- How to design the work environment for safety and productivity, that is, for the most appropriate person-environment fit (p-e fit), to enable and enhance personal and organisational competence.

Job redesign based on personal goal setting complementary to organisational goals, is likely to improve the effort-performance-reward process and thus intrinsically motivate those who need to fulfil higher order needs. Clearly, goal-setting/goal-tracking and motivating are critical abilities for managers who aspire to be transformational leaders.

9.18. Imperial Level of Transactional Leadership

Individuals managing at the lowest level (Imperial) of transactional leadership must practise the mission related goal setting and tracking that is essential for personal competence.

Personal productivity is concerned with the degree to which individuals safely and competently harmonise and meet personal and organisational goals. Thus, managers and their people are likely to be productive at work if their personal vision and occupational mission, code of ethics or standards of practise harmonise with the vision/mission and culture of the organisation in which they're employed.

Managers working at the Imperial level should understand the difference between knowing-that and knowing-how. Knowing-that is theoretical knowledge; knowing-how is practical knowledge, gained through directly practising skills and taking up cultural practices (Benner, 1984). The know-how of competent performers in action is highly procedural and goal oriented, whereas the know-how of naive performers is not (Newell and Simon, 1972; Hunt and Kinross, 1988).

9.19. Interpersonal Level of Transactional Leadership

Organisations are information-processing systems packed full of shared symbolism and ritual, language, meanings, beliefs and emotions resulting from the interactions between people and the environments in which they are required to perform (Pfeffer, 1981).

For higher-order transactional (Interpersonal) leadership, the flows of information, communication, decisions and work linking competent, productive individuals and work-teams through the organisation must be goal-directed, integrated and if possible, electronically networked (Appendix 6). There should be a communication manager and a formal communication policy for the enterprise. Managers at all organisation levels and the individuals in their teams, must be computer-literate to access, for example, EIS (executive information systems), DSS (decision support systems), MIS (management information systems). Because of the relationship between safety and productivity, managers must ensure that the company information system provides safety information particularly if operating in a high-risk industry, eg., modern aviation, health, power generation. So Safety Information Systems (SIS) are particularly important (Reason, 1990).

9.20. Institutional, or Transformational Leadership

At the transformational (Institutional) level, leader-managers are likely to be concerned with:

- the enterprise as a dynamic open system driven by an inspiring, future vision shared and developed by all who contribute to the enterprise.
- developing and realising vision oriented personal goals and agendas; enhancing interpersonal connections, mutual obligations, personal standards and value systems in the context of the future vision.

‘Fourth Blueprint’ organisational forms, loosely coupled, collaborative networks and strategic alliances (Limerick and Cunningham, 1993).

‘management transformation’, rather than ‘management development’, which goes hand in hand with ‘organisational transformation’ rather than ‘organisational development’.

Organisational effectiveness derived from an ‘upside down, inside out’ dynamically networked, human activity system approach (Engeström, 1987, 1992) to ‘built-in’ Quality and Safety. See Crook (1998b) for aspects of communication within dynamically networked human activity systems.

9.21. System Safety - A Critical Issue

System Safety (Miller, 1988; Reason, 1990) is now a critical issue for management in workplace and system development. Increasingly, the law requires a safe place and system of work and can impose severe penalties for incompetent executives and their companies.

Managers do not always work under non-threatening conditions. They must be relied on to cope when the ‘chips are down’. For example, nurse managers engaged in Intensive Care and Accident and Emergency work can expect demanding if not exciting action for some of the time. So can the Police and any member of an Emergency Service. Aircraft captains operating internationally, managing and in legal *Command* of very high-tech aircraft weighing nearly 400 tonnes at take-off, worth US \$200 million, and flight crew, cabin crew and passengers totalling approximately 450 souls (B747-400), expect to be faced at least once in their careers, with a major ‘critical-in-flight event’.

Law enforcement, emergency service, nurse and pilot leader-managers and their teams are expected to perform successfully in life or death situations and cope under conditions of high stress and anxiety (see Dewe and Guest, 1990, for vocational aspects of coping).

We know, from the nine ‘solid contributions of leadership research’ (Fiedler and House, 1988), that:

“Intellectual abilities and experience contribute highly to performance only under selected conditions. ... Research is very clear in showing that experience correlates with performance only under conditions of stress while intelligence tends to correlate with performance only when stress experienced by the leader is relatively low. Whether leader intelligence or experience is required is determined by the task and the environment.”

What is the nature of ‘experience’ in the context of performing under conditions of stress? How do competent leader-managers cope when the ‘chips are down’?

Benner (1984), after investigating experienced nurses acting in high stress, life or death emergency situations, asserts that the process of intuitive grasp makes expert human decision making possible. Intuitive grasp relies on perceptual capacity based on prior experience. It is the direct apprehension of a situation based on a background of similar and dissimilar situations and internalised as know-how. It is argued that this internalised know-how is a structured ‘knowledge-base’ of education, training and experience - a knowledge-base relevant to past situations stored as patterns of information in ‘modular sub-systems’ in long term memory (Reason, 1990). ‘Procedural’ memory underlies behavioural habits; ‘episodic’ memory stores representations of the events experienced by an individual in the past; while ‘semantic’ memory stores linguistically based knowledge about the world, abstracted from multiple episodes (Porac, 1990).

‘A memory’ is now seen by neuro-scientists as “nothing more than a few thousand brain cells firing in a particular, established pattern” (Damasio, 1994). A myriad of healthy, well developed and utilised neuronal pathways interconnect to form the complex and dynamic neuronal network we activate to access the knowledge-base that enables, modifies or denies the performances desired by our rational and emotional minds (Goleman, 1995).

Intuitive judgement is what distinguishes expert human judgement from the decisions or computations that might be made by a beginner or by a machine. Thus experienced airline captains and their crews, confronted with sudden, dire in-flight emergencies accompanied by high stress and anxiety, have been able to ‘draw on their experience’ - their accumulated, internalised know-how - to exercise the Command accomplishment successfully and perform amazing and inspiring feats of airmanship. In much the same way, police, nurses and other emergency service personnel, working in disaster, casualty and relief situations with the minimum of resources under appalling conditions, perform with commitment and sustained professionalism. What *great and noble object* (Slim, 1956) drives such performance? The answer might be that these professionals “really care”.

After critical incidents and situations, the capability of the individual or team to demonstrate technical competence, professionalism, a sincere concern for others and the ability consistently to communicate decisions into safe, productive action, inspires gratitude, confidence and respect.

Accomplished professionals talk of ‘being aware’, of having a ‘gut-feeling that things are about to go wrong.’ What is the nature of this feeling, tinged with a trace of anxiety, this perceptual

awareness which serves to alert these professional managers that ‘something's not quite right here’. How long does it take to acquire this awareness? How is it acquired?

Is it possible to help naive managers acquire the gut-feel or intuitive grasp of the experienced, accomplished manager in the context of safe performance in emergency situations? It is a complex issue (Wickens and Flach, 1988), but as Romiszowski (1981) says:

*"Experience **can** be taught, if you can analyse it."*

9.22. Contemporary Management is Complex

“Virtually all the prime tasks of management teams - developing strategy, shaping visions, designing policy and organisation structures - involve wrestling with enormous complexity. Furthermore, this complexity does not 'stay put'. Each situation is in a continuous state of flux.” (Senge, 1992).

Senge is referring to the need for contemporary managers to process information of ‘dynamic complexity’ in addition to ‘detail complexity’ information.

Detail complexity is to do with cause and effect in close proximity and is symptomatic of the linear-thinking that pervades traditional reactive managing. Dynamic complexity is found in situations where cause and effect are subtle and where the effects of interventions over time are not so obvious. Systems thinking rather than linear thinking is an essential capability if managers and professional specialists are to begin to cope with dynamic complexity. Systems thinking is process thinking.

With the aid of modern information-processing approaches to needs assessment, instructional systems development and information technology to process the information, it is now possible to analyse experience, structure it and teach it (cf., flight crew performance management in modern commercial aviation: Hunt, 1992; Hunt and Hunt, 1992).

As well developed cognitive models of expertise exist and are being applied in civil aviation, it appears feasible to develop instruction in empowering leadership for leader-managers and creative followership in their people in any industry sector.

9.23. Learning Organisations

Senge (1990), defines learning organisations as places:

“where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together.”

The notion of the learning organisation is not new. 60 years ago, Whitehead (1931) pointed out that the time-span of cultural change could no longer be contained within the human life-span. Before this, what persons learned in youth remained valid and useful for the rest of their lives.

Berlo (1975), reviewing the revolutionary changes affecting humankind, wrote:

“Today no educated man can master all of the information he needs. Further knowledge often is obsolete even before the learner has mastered it.

Over 90% of the scientists who ever lived are alive today. The amount of information in many technical and scientific fields is doubling every eight years - or six years - or five years. Most individuals will have to be retrained at least once and typically twice, if they are to maintain relevance to the informational levels of tomorrow.

It is no longer possible to store within the brain of man all of the information he needs; ie., man is obsolete as a memory bank. ... Man now needs to be taught how to process information that is stored through technology.”

Today’s enterprises must be structured to manage knowledge.

A few years earlier, Schön (1971), commented on the passing of the relatively stable state of the last century:

“The loss of the stable state means that our society and all of its institutions are in continuing processes of transformation. We cannot expect new stable states that will endure even for our life-times.

We must learn to understand, guide, influence and manage these transformations. We must make the capacity for understanding them integral to ourselves and our institutions. We must, in other words, become adept at learning.

We must become able not only to transform our institutions in response to changing situations and environments; we must invent and develop institutions that are ‘learning systems’, that is to say, systems capable of bringing about their own continuing transformation.

The task which the loss of the stable state makes imperative, for the person, for our institutions, for our society as a whole, is to learn about learning.

What is the nature of the process by which organisations, institutions and societies transform themselves? What are the characteristics of effective learning systems? What are the forms and limits of knowledge that can operate within processes of social learning? What demands are made upon a person who engages in this kind of learning?”

Special demands are made upon those in leadership positions as organisations, institutions and societies transform to survive in the unstable, uncertain environments in which we currently live and work

Systems theory, supplanting the mechanistic world view of Cartesian - Newtonian science, has been mainstream in organisation behaviour for some time:

“The extraordinary rich and diverse institutional resources which demand coordinating and communicating links for their optimum utilisation can be seen clearly in their interacting reality through systems theory. Although it originated in the area of engineering (Griffiths, 1964), its significance in demonstrating relationships among institutions (systems and sub-systems) and directions of change is too valuable to ignore.” (Walker, 1980).

Two years later, the quantum physicist/philosopher Capra (1982) concluded:

“We are trying to apply the concepts of an out dated world view - the mechanistic world view of Cartesian - Newtonian science - to a reality that can no longer be understood in these terms. We live in a globally inter-connected world, in which biological, psychological, social and environmental phenomena are all inter-dependent. To describe this world appropriately we need an ecological perspective that the Cartesian world cannot offer.

... The systems view is an ecological view. Like the view of modern physics, it emphasises the inter-relatedness and inter-dependence of all phenomena and the dynamic nature of living systems. All structure is seen as a manifestation of underlying processes, and living systems are described in terms of patterns of organisation.”

Capra (1991) and his associates find that at global level there are “manifestations of a paradigm shift from self assertion to integration.” Currently there is an over-emphasis on self-assertion; Capra thinks there has to be a better balance:

“Our perceptions and thinking must shift from analysis to synthesis; linear thinking to non-linear thinking; rational to intuitive; reductionism to holism.”

Capra concludes that our values must shift from:

“Competition to cooperation; domination to partnership; expansion to conservation; quantity to quality.”

Moving from value systems regulated by competition, domination, expansion and quantity to cooperation, partnership, conservation and quality means putting new thinking and values into practice. It means moving from the organisational hierarchy through which domination is practised to the network, and exercising expert and referent power. (See Raven, 1965, for dimensions of power.)

Limerick and Cunnington (1993) support this view in justifying the “*emergence of the new organisation - the network*”.

If these propositions are accepted, then new organisational methods are required. Senge (1990) focuses these issues in the context of institutional competence and ethical growth, with a systemic, ‘progressive world view’ in mind - a dynamic, holistic p-e fit at the global level (Capra, 1982; Prigogine and Stengers, 1984; Bohm and Peat, 1987). Senge reports that of Fortune 500 listed industrials in the late 1970s, early 1980s:

“The average lifetime of the largest enterprises is probably less than half the average lifetime of a person in an industrial society.”

“Learning disabilities are tragic in children, but they are fatal in organisations. Because of them, few corporations live even half as long as a person - most die before they reach the age of 40.”

Managers in these short-life enterprises, by performing for someone else’s approval, created the conditions that pre-destined them and thus their companies to mediocre performance.

“On the other hand, a small number of companies survived for 75 years or longer. The key to their survival was the ability to run experiments to the margin, to continually explore new business and organisational opportunities that create potential new sources of growth. ...The rate at which organisations learn may become the only sustainable source of competitive advantage.” (Senge, 1990).

Managers in these superior enterprises had learned that superior performance depends on expanding the capability of the enterprise, not only by adapting, which is about coping (Dewe and Guest, 1990), but through continuous experimentation, feedback and learning. Over time, superior organisational performance depends on superior organisational learning. Superior managers in learning organisations are concerned, not merely with coping, but with ‘generative learning’, that is, with understanding the systems which control events.

In the context of System Safety, Westrum (1988) finds that organisations that learn generatively:

“are characterised by a high degree of ostensibly irregular or unconventional activity in furthering their goals. They set targets for themselves beyond ordinary expectations and fulfil

them because they are willing to do unexpected things in unexpected ways. They emphasise results rather than methods, and value substance more than form. Hazards tend to quickly discovered and neutralised because lower level personnel have both permission to see and permission to do.”

According to this view managers must focus on a dynamic mix of both adaptive and creative, generative learning for their companies to survive and prosper.

“In an increasingly dynamic, inter-dependent and unpredictable world, it is simply no longer possible for anyone to 'figure it all out at the top'. The old model 'the top thinks and the locals act' must now give way to integrated thinking at all levels. While the challenge is great, so is the potential pay-off. The person who figures out how to harness the collective genius of the people in his or her organisation is going to blow the competition away.” (Senge, 1990).

Senge says a learning organisation harnesses the collective genius of its people, the most valuable resource there is on Earth.

Garvin (1993) thinks Senge's definition of a learning organisation is *“far too abstract”* and that three critical issues must be addressed: meaning, management and measurement of organisational learning:

1. There must be an *“actionable and easier to apply”* definition of learning organisations which meets the need for meaning. Thus:

“A learning organisation is an organisation skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights.”

2. Guide-lines *“filled with operational advice”* are needed for management.

“Learning organisations are skilled at five main activities:

- *systematic problem-solving,*
- *experimentation with new approaches,*
- *learning from their own experience and past history,*
- *learning from the experiences and best practices of others,*
- *transferring knowledge quickly and efficiently through the organisation.*

By creating systems and processes that support these activities and integrate them into the fabric of daily operations, companies can manage their learning more effectively.”

3. Measurement tools are needed for *“assessing an organisation's rate and level of learning to ensure that gains have been made.”*

“Organisational learning can usually be traced through three overlapping stages. The first step is cognitive. Members of the organisation are exposed to new ideas, expand their knowledge, and begin to think differently.

The second step is behavioural. Employees begin to internalise new insights and alter their behaviour.

The third step is performance improvement, with changes in behaviour leading to measurable improvements in results: superior quality, better delivery, increased market share, or other

tangible gains. Because cognitive learning and behavioural changes typically precede improvements in performance, a complete learning audit must include all three.”

Schein (1993) makes the point that the problem is no longer the management of change, but the management of ‘surprise’. He outlines a change management procedure for managers to use to help their organisations change and ultimately, perpetually to learn. This procedure is a blend of behavioural and cognitive approaches to adult learning and requires managers to be able to apply reinforcement theory.

9.24. Meeting Customer Expectations

According to Senge (1990), learning organisations are about commitment to an inspiring institutional vision and striving for excellence. They are about customer service, common courtesy to others and continuous improvement for Quality.

Peters and Waterman (1984) observe that the heart of Quality is primarily a commitment by all within the enterprise to customers and product pursued with a persistence and passion for excellence. They say that Quality is about people, eyeball contact, care, involvement, pride, consistency and gut feel about what is right and good.

Increasingly, as Kaufman (1993) observes, Quality is about caring for the environment.

Quality is defined internationally as *“the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs”*. (ISO 8402: 1986, Quality-Vocabulary).

Product or service quality may not be meaningfully addressed without an appropriate needs assessment based on cognitive theories of human competence. An ‘appropriate needs assessment’ must be powerful enough to define and categorise for input into computer memory, the generic human information-processing abilities necessary to process the turbulent mix of detail and dynamic complexity information in contemporary organisational systems.

Then, if Quality is to be ‘built-in’ to the design, development and management of learning organisations, Garvin’s (1993) three critical issues - meaning, management and measurement - must be successfully addressed.

In the context of assessing Quality in a service business, Senge (1990) emphasises:

“It is simply not possible to assess capacity separately from Quality in a service business.”

Service capacity is the productive amalgam of organisation mission driven processes, people numbers, experience, and morale needed continually to satisfy client demand at the level of Quality clients need, while the enterprise and its people enjoy self-sustaining growth.

Service capacity in a modern networked organisation must be assessed as the capacity of the organisation to process Quality Information. Needs assessment procedures must be capable of

generating valid statements of ‘how well is well enough?’ for specifications of Quality, and statistically valid and reliable assessments of service capacity in the context of managing human performance.

Cognitive theories of human competence, instructional systems methodology and Quality measurement tools are therefore a fundamental cornerstone in the development of learning organisations.

See Crook (1995; 1998a) for an appraisal of modern instructional systems development (ISD) applied for flight operations managers in civil aviation and for executive development.

The Military is increasingly committed to Good Service Quality as the complexity of military technology increases and finance for defence decreases. A successful practitioner of Quality in the United States Air Force (Loh, 1991) defines Quality as *“meeting customer expectations in products and services.”*

Loh concedes that Quality principles are particularly difficult to implement within hierarchical, rigid and procedure oriented organisations like the military, but can be made to work. Successfully to apply these principles involves:

“achieving cultural change, a fundamental shift in the manner in which an organisation and its members see their roles and responsibilities;

knowing and satisfying the needs of customers, both internal and external;
delegating responsibility and authority, and accepting accountability;

giving everyone a stake in the outcome, a concept described as 'ownership by the membership';

setting goals, competing, measuring progress and rewarding performance;
creating a climate of pride, professionalism, excellence and trust;
striving for continuous improvement.”

It is not generally known that TQM started in the US military with military specifications (‘Milspecs’) for procurement.

Covey (1990) defines ‘corporate culture’ as an:

“ecosystem of inter-dependent relationships, and these must be balanced synergistically and based on trust to achieve Quality.”

Achieving cultural change with Quality in mind is about enhancing inter-dependence and mutual trust through organisations, whether civil or military.

Limerick and Cunningham (1993) assert:

“Quality Management should not be seen as an incremental extension of current management practices - it is part of a complete paradigm shift in management and organisation.

... In view of the rate and kind of change occurring in organisations today, it is understandable that current management literature should focus on transformational leadership. Transformational leaders create new situations and processes; transactional leaders work by increment.”

9.25. Manager to Leader-Manager

People in a learning organisation share an inspiring, Future Vision consistent with their Core Values, and from which their Business Mission and Team Purpose statements will be derived (Senge, 1990):

“Vision is the ‘What?’ - the picture of the future we seek to create.”

“Mission (or ‘Purpose’) is the ‘Why’, the organisation’s answer to the question: “Why do we exist?”

“Core Values answer the question: ‘How do we want to act, consistent with our Mission, along the path toward achieving our Vision?’ ”.

With the networked learning organisation in mind, Limerick and Cunnington (1993) distinguish between transcendental, strategic and operational values.

Transcendental values relate to the identity of an organisation and will remain the same regardless of strategy or structure. These are values like

“respect for the individual, honesty and caring, which are not bound by experience.”

Transcendental values define *“what kind of people we would like to be.”*

“Transcendental values are those that transcend all action: they hold true whatever the field and whatever the particularities of the situation - they are held to be universally true, and ends-in-themselves. ... transcendental values are closely associated with the organisation’s metastrategy and identity.

Strategic values relate to organisational configuration:

“They define what’s good for the firm. ... They define not what kind of people we are, but what we do.

Strategic values are those closely related to the strategic logic of the organisation, such as a commitment to market share, growth or the value of technical excellence.”

Operational values relate to organisational systems of action:

“Operational values are those intimately related to the day-to-day operations of the different parts of the organisation. They define how things are done.”

A learning organisation establishes “*what it believes in*” by “*anchoring vision in a set of governing ideas*” including mission (or purpose) and core (or transcendental) values. The process of determining a Company’s Governing Ideas, with the genuine involvement and commitment of all within the Company, is on-going and for an impatient chief executive, can take a long time. The process requires a different array of capabilities than those that managers have traditionally believed they needed.

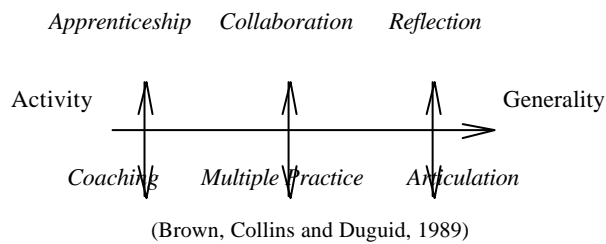
The environments of the early 1900s spawned Scientific Management. Now, the ‘discontinuous change’ environments (Ansoff, 1990) of the 1990s have spawned the ‘learning organisation’ or ‘knowledge management structure’. Civil and military managers have always been forced to modify organisational structures and management styles to accommodate the rapidly changing socio-economic-political in which they live and work. Now, if an enterprise is to survive and prosper, its managers and their people must perform and learn from their mistakes together, in a climate of professionalism, pride, openness, trust and Quality.

9.26. Situated Learning and the Development of Expertise

The environments within which people live and work profoundly affect their personal development and performance. This is what Johnston (1996) says about the situated learning brought about by the many social interactions we experience daily, privately and professionally, through a lifetime.

“Situated learning research suggests that the successful acquisition of knowledge is manifested by effective and effortless engagement in practice - in other words, during the smooth flow of activity we associate with sophisticated expert performance (Dreyfus, 1993).

This implies that cognitive and social processes cannot be separated. Learning here is treated as a process of enculturation - as a kind of cognitive apprenticeship (Brown, Collins and Duguid, 1989; Lave and Wenger, 1991).



The learning of ‘facts’ operational knowledge cannot be separated from the context and processes of their acquisition and application. The transition from novice to expert should therefore be considered primarily as a social learning activity, rather than the mere accumulation of more and more knowledge and skills.

The key role of ‘significant others’ in this learning - apprenticeship - transition is illustrated in the figure (Brown, Collins and Duguid, 1989) which emphasises the social processes of ‘becoming’ part of a working milieu and developing domain-generalisable skills.”

Johnson (1996) goes on to say there is a need to integrate expertise and situational content in learning:

“The critical need is for accurate understandings of the key domain-specific tasks, heuristics, schema, functional competencies and operating criteria which collectively constitute expertise within a given domain.”

Engeström (1992) says “*expertise resides in collective activity systems*”. Managers and the people in their ‘real teams’ collaborate and ‘team-learn’ over time to create new knowledge through purposeful activity. Interconnected, real teams within a dynamically networked enterprise generate a dynamic network of activity systems. The processes in this productive, collaborative activity are cognitive, and the key technology is language. See Crook (1998b) for aspects of communication within dynamically networked human activity systems.

9.27. Best Practice

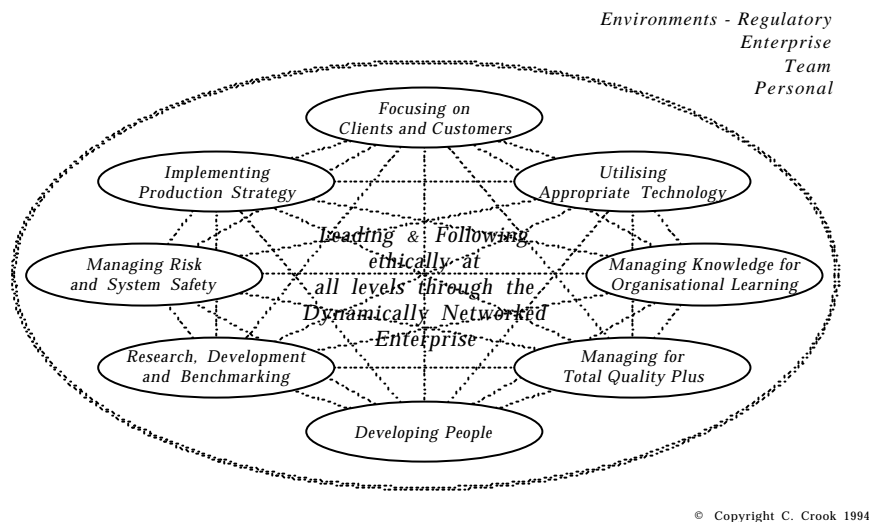
Knowing how-to-do and how-to-be means striving continually for Best Practice, defined as:

“The collaborative way in which competent people, inspired and aligned by the Governing Ideas of their Enterprise, successfully create, produce and supply Total Quality Plus products and services. They achieve this by applying and integrating the disciplines and systemic processes of the dynamically networked Learning Organisation.

These worthy personal, occupational and enterprise processes, when ethically and effectively applied in the context of the Governing Ideas of the Enterprise, lead to sustainable, world-class outcomes in innovation, flexibility, cost, competitiveness, timeliness, quality, client and customer service; with personal and wellness for the ‘collaborative individuals’ pursuing continuous improvement, productivity and safety.”

The interdependent arenas of personal and professional concern for Best Practice, integrated by distributed ethical leadership and followership through the dynamically networked, boundaryless learning organisation, are depicted in Figure 11.

Figure 11 Arenas of personal and professional concern integrated for Best Practice



9.28. Leader-Managers as Systems Designers

Individual human competence and performance is profoundly influenced by the design, culture and communication climate of the organisation in which the individual works.

Organisational effectiveness is profoundly influenced by the design and regulation of the national system in which that organisation functions. This is why there's a need for managers to be able to develop safe, productive person-environment fits in all aspects of organisation or system design.

Two points must be emphasised:

1. Competent organisational or system design, development and renewal is deliberate and purposeful.
2. The accountability to clients and stakeholders for the purposeful design, development and renewal of any organisation and for the safe, productive, competent performance of that organisation, rests with the Board and Chief Executive. Boards of Directors must be learning boards.

Twenty years ago, Gilbert (1978) found that:

“For any given accomplishment, a deficiency in performance always has as its immediate cause a deficiency in a behaviour repertory, or in the environment that supports the repertory, or in both. But its ultimate cause will be found in a deficiency of the management system.”

Then, Wickens (1984) advised:

“Although incorrect decisions are made by the individual human decision maker and may be attributable directly to human limitations, they are rarely the individual’s fault. Blame must be placed instead on the design of systems that overload human information-processing capabilities.”

From the perspective of System Safety:

“Because of constant technological progress, major equipment failures or operational personnel errors are seldom the root cause of breakdowns in system safety defences. Instead, these breakdowns are the consequence of human decision-making failures which occur primarily within managerial sectors.” (ICAO Human Factors Digest No 10, 1994).

Designing a learning organisation is about creating: within the enterprise.

The policies, strategies and structures to translate ideas creatively into competent decisions right through the enterprise in shifting business conditions.

Effective learning processes so that policies, strategies and structures are continually and successfully improved by employees to anticipate the market.

9.28.1. Leader-Managers as Teachers and Coaches

“By and large, leaders in our current organisations focus their attention on events and patterns of behaviour, and, under their influence, their organisations do likewise. That’s why contemporary organisations are predominantly reactive, or at best responsive - rarely generative.

... On the other hand, leaders in learning organisations pay attention to all three levels (systemic structure, patterns of behaviour, and events), but focus especially on systemic structure. Largely by example, they teach people throughout the organisation to do likewise.” (Senge, 1990).

Leader-managers also help their people learn, develop and grow, individually and in teams by facilitating and coaching in the context of jointly negotiated business goals. Leader-managers ensure the people in their teams are guaranteed the resources to achieve these goals.

Leader-managers provide the third fundamental cornerstone of the learning organisation: the infrastructure which encourages and enables people at all levels of the enterprise to innovate.

According to Knowles (1990), creative leaders “make things happen by releasing the energy of others.” To achieve this in organisations, Knowles says managers should be skilled in adult learning.

Senge (1990) observes that empowering managers as leader-teachers help their people to:

- *Restructure their unique perceptions of current reality* beyond events and superficial conditions, into the underlying systemic causes of problems;
- *See the nature of the gap between current reality and the future vision* for both individual and organisation, the source of intrinsically motivating change;
- *Unravel the constraining mental conditioning caused by past experience to empower their people* creatively to see new possibilities for developing both the business and their personal futures.

For leader-managers in Aotearoa/New Zealand, ‘empowering the people in their teams’ is a cross-cultural capability:

“I am constantly reminded of the number of Pakeha people who know better than I do what is good for me. It is about time we were allowed to think for ourselves and to say which things we want and why we want them. And to say that we do things for our reasons and not for the reasons set down by Pakeha experts.” (Rangihau, 1975)

“Abel Tasman or Captain Cook did not find us. We were never aware that we were lost.” (Durie, 1990)

“The debate about bi-culturalism versus multi-culturalism is a red herring which deflects attention away from the reality that the principal political relationship which must be addressed is that between two signatories of the Treaty of Waitangi - Maori and the Crown. Ethnic and cultural diversity in New Zealand should be celebrated and fostered - we are all New Zealanders but we are not all the same. Maori, however, have a unique place here in that our culture is only kept alive in New Zealand. Acknowledging Maori as the Tangata Whenua does not deny the rights of other ethnic and cultural groups here.” (Wira Gardiner, 1993)

Communicating is a critical manager ability (Appendix 6). Communicating successfully cross-culturally can be difficult for managers of any race. Leading in an enterprise in a multi-ethnic society operating globally is likely to be very challenging for the ubiquitous manager with profound consequences for vocational education and training

9.28.2. Leader-Managers as Stewards

Stewardship “begins with the natural feeling that one wants to serve and serve first. This conscious choice brings one to aspire to lead. That person is sharply different from one who is leader first, perhaps because of the need to assuage an unusual power drive or to acquire material possessions.” (Senge, 1990).

The sense of stewardship of empowering leader-managers is evident on two levels:

“stewardship for the people they lead and stewardship for the larger purpose or vision that underlies the enterprise.” (Senge, 1990).

9.28.3. Three Cornerstones of Learning Organisations

There are three fundamental, interdependent learning organisation cornerstones identified by Senge et al., (1994):

- Cognitive theories of human competence, instructional systems methodology and Quality measurement tools;
- Shared Governing Ideas, so that the aspirations of the company match the aspirations of its people;
- The infrastructure which encourages and enables people at all levels of the enterprise to innovate.

9.28.4. The Emerging Need for ‘Distributed Leadership’ and Expertise

More recently, Senge (1996) identified three levels of leadership he calls local line, executive and internal networkers, or community builders. These three levels are a manifestation of Senge’s ‘three new roles’ for managers - system designer, teacher and steward - distributed through the enterprise.

“Local line leaders, who can undertake meaningful organisational experiments to test whether new learning capabilities lead to improved business results.

Executive leaders who provide support for line leaders, develop learning infrastructures, and lead by example in the gradual process of evolving the norms and behaviours of a learning culture.

Internal networkers, or community builders, the ‘seed carriers’ of the new culture, who can move freely about the organisation to find those who are predisposed to bringing about change, help out in organisational experiments, and aid in the diffusion of new learnings.”

A decade ago, Schein (1985) felt that building an organisation’s culture and shaping its evolution is the unique and essential function of leadership. Schein also felt that most top executives were not qualified for the task of developing organisational culture. Now, Schein (1996), in the context of the executive leader of the future and developing organisational culture, concludes that

as the institutions of the past may be obsolete, new forms of governance and leadership will have to be learned, and that this learning must be perpetual. Top executives of the future deserving the accolade of leader will be characterised by:

- *“extraordinary levels of perception and insight into the realities of the world and into themselves.*
- *extraordinary levels of motivation to enable them to go through the inevitable pain of learning and change, especially in a world with looser boundaries, in which loyalties become more difficult to define.*
- *the emotional strength to manage their own and others’ anxiety as learning and change become more and more a way of life.*
- *new skills in analysing cultural assumptions, identifying functional and dysfunctional assumptions, and evolving processes that enlarge the culture by building on its strengths and functional elements.*
- *the willingness and ability to involve others and elicit their participation, because tasks will be too complex and information too widely distributed for leaders to solve problems on their own.*
- *the willingness and ability to share power and control according to people’s knowledge and skills, that is to permit and encourage leadership to flourish throughout the organisation.”*

Schein also advocates the emerging need for distributed leadership (and expertise) through the enterprise:

“The leader of the future will be a person ... who can lead and follow, be central and marginal, be hierarchically above and below, be individualistic and a team player, and, above all, be a perpetual learner.”

Handy (1996) echoes this, and, drawing attention to the new organisational forms that are rapidly developing, says:

“Today’s organisation is typically a 20/80 place with only 20% of the people involved being employed full-time by the organisation. The others are suppliers or contractors, part-timers, or self-employed professionals. More and more, the ‘organisation’ is a box of contracts, rather than a home for life for all its people.”

Then, highlighting the growing need for interdependence and productive relationships:

“More collegial relationships are being sought to replace those which have been characterised by the domination of one person or people by another. ... It is a time for

reaching out and listening to the views of others, and revising many relationships.” (Christensen, 1990).

“Life is, by nature, highly interdependent, As an interdependent person, I have the opportunity to share myself deeply, meaningfully with others, and I have access to the vast resources and potential of other human beings.” (Covey, 1989).

The emerging ‘virtual’, boundaryless organisation is one in which managers must be able to manage and lead people they can’t see. Like those pursuing Total Quality, managers must learn to ‘let go’; they now need to rely on the *distributed leadership* and *distributed expertise* (Engeström, 1992) of their employees and contractors, meet expectations, build on trust and foster productive relationships in diverse, networked communities whose members are sincerely concerned with perpetual learning.

9.28.5. The State of Play in New Zealand Management

Does the management style of autocratic paternalism ‘found in the late 1980's without much effort’ (McClennan et al., 1987) still prevail in most new Zealand companies? How appropriate are the human resource managing and communicating styles practised by New Zealand managers for the deregulated, dynamic environments in which they live and work?

A research report from the New Zealand Institute of Economic Research ‘*Islands of Excellence? A Study of Management in New Zealand*’ (Campbell-Hunt et al., 1993) concluded that the way that New Zealand organisations were adjusting to deregulation must change and that New Zealand managers must improve. Management skills and management development, human resource management and management style were found to be “*very limited*”. In particular, the management of human resources was not adjusting at all in response to deregulation pressures.

The “*average practice*” of New Zealand managers:

“is still consistent with a management style appropriate to a stable environment. In general, NZ top managements are less participative in their management style than managers in any of our major trading partners. NZ managers spend more time on the bureaucratic functions of planning, control and decision-making than do effective managers in the US.

Many studies reveal a gap between what managers affirm, and even commit resources to, and what they ensure takes place. This raises questions about their real intent to create and to monitor changes.” (Campbell-Hunt et al., 1993).

In a follow-up study, Campbell-Hunt and Corbett (1996) report there have been improvements. Almost half of New Zealand businesses have suffered a revolution and have escaped the post-deregulation ‘survival’ condition identified three years earlier. However, the days of quick fixes with 4 x 2 and #8 fencing wire are now over. Managers must “*abandon the traditional Kiwi*

Do-It-Yourself” approach if their companies are to survive in an integrated world economy. The majority of New Zealand managers lag behind international best practice in the way they treat people. Most managers are only part of the way through a change from the traditional technomilitary ‘command-and-control’ mentality towards managing and communicating styles involving ‘delegating-and-coaching’.

“There has been a significant increase in the extent of communication within organisations, and the ideal style of leadership for flat, empowered organisations is well known, but the evidence suggests that managers are still struggling toward that ideal.”

9.29. Appendix One. Qualities of Leadership.

9.29.1. ‘The Trait Approach’ (Adair, 1984, pp. 265-266)

Leadership ‘Traits’ advocated by Various Armed Services in the Western World in the 1950/60’s

United States of America and Canada

US Marine Corps

Bearing
Courage
Decisiveness
Dependability
Endurance
Enthusiasm
Initiative
Integrity
Judgement
Justice
Knowledge
Loyalty
Tact
Unselfishness

US Army

Bearing
Courage (physical/moral)
Decisiveness
Endurance
Initiative
Integrity
Judgement
Justice
Loyalty
Tact
Unselfishness

RMC Canada

Commonsense
Confidence
Courage
Decisiveness
Energy
Enthusiasm
Good Judgement
Honesty
Humour
Initiative
Justice
Loyalty
Perseverance
Personal Example
Professional Competence
Self-control
Tact

United Kingdom

Royal Navy

Royal Air Force

Army

BRNC Dartmouth	RAF College Cranwell	FM Lord Slim
Cheerfulness	Respect:	Courage
Commonsense		Initiative
Courage	Resolution	Knowledge
Faith	Efficiency	Will-power
Fortitude	Sympathy	
Good Judgement	Personality	
Humanity	Energy	
Integrity	Courage	
Knowledge	Tenacity	FM Lord Harding
Loyalty		Courage
Mental Fitness		Fitness
Self-control		Initiative
Sense of Duty		Integrity
Tenacity		Will-power

9.29.2. Nine 'Solid Contributions Of Leadership Research'

- "1. The field has identified two major categories of leadership behaviour, one concerned with interpersonal relations (eg. consideration), the other with task-accomplishment (eg. structuring). While there are questions about sub-structures of the various scales, questions of halo effect and attribution, there is solid evidence that leaders are judged on these two aspects of behaviour by their subordinates, (Misumi, 1985).*
- 2. There is no one ideal leader personality. However, effective leaders tend to have a high need to influence others, to achieve, and they tend to be bright, competent and socially adept, rather than stupid, incompetent and social disasters.*
- 3. Leader-follower relations affect the performance, satisfaction, motivation, self-esteem and well-being of followers. Therefore the study of leadership is of substantial social, as well as organisational significance.*
- 4. We know that different situations require different leader behaviours. These are the behaviours required to compensate for deficiencies in the followers' environment and abilities. Whether these behaviours can be called out at will is a question in dispute. There are no behaviours exclusively manifested by leaders. For example, Megaree, Bogart and Anderson (1966) showed that pro-social assertiveness is aroused by salient factors related to the leader's control and influence; McClelland (1985) and his associates have consistently shown that social cues arouse needs for achievement and power. Fiedler's (1987) research*

shows that intellectual abilities are effectively used only if the leader is not under stress, is directive, and has the support of group members.

5. *Attributions play a substantial part in the leadership process. As in any other human interaction, the motivations attributed by leaders to group members in judging their behaviour and performance determine in large part how leaders behave toward them (Mitchell and Wood, 1980).*
6. *Intellectual abilities and experience contribute highly to performance only under selected conditions. Research is very clear in showing that experience correlates with performance only under conditions of stress while intelligence tends to correlate with performance only when stress experienced by the leader is relatively low. Whether leader intelligence or experience is required is determined by the task and the environment.*
7. *Charismatic or transformational leadership is not a mysterious process, but the result of such clearly identifiable behaviours as the articulation of transcendent goals, demonstration of strong self-confidence and confidence in others, setting a personal example for followers, showing high expectations for followers performance, and the ability to communicate one's faith in one's goals.*
8. *We have considerable evidence in support of several leadership theories. While the details and specific interpretations of measures may be in dispute, and some of the initial theoretical propositions have been rejected, there can be little question that many of their principles are supported empirically. We would consider among the more prominent to be, roughly in order of date of publication,*

*Fiedler's contingency model (1964),
McClelland's need-achievement theory (1961),
House's path-goal theory (1971),
Vroom and Yetton's theory of leader decision making (1973),
Graen and Cashman's vertical dyad linkage theory (1975),
Misumi's PM theory (1985),*

as well as the more recent charismatic and transformational theories of leadership (House, 1977; Bass, 1985).

9. *Several leadership training methods have been subjected to rigorous evaluations. These include behaviour modelling (Goldstein and Sorcher, 1974); leader match training (Fiedler and Chemers, 1974); motivation training (McClelland, 1985; Miner, 1978); and goal-setting (Locke, 1968; Latham and Saari, 1979)."*

9.30. Appendix Two. Managing For Total Quality in 'Loosely Coupled Networks & Alliances'

Total Quality Management (TQM) is essential for organisational success and competitive advantage in contemporary business environments. Managing for Total Quality is an imperative and so is regarded as the norm.

With TQM in mind, Limerick and Cunnington (1993) conclude:

"In view of the rate and kind of change occurring in organisations today, it is understandable that current management literature should focus on transformational leadership. The move from Third to Fourth Blueprint organisations involves a quantum change in organisational strategy, structure and culture.

Changes towards such organisations therefore cannot be accomplished in an incremental fashion; they are, axiomatically, transformational. Transformational leaders create new situations and processes; transactional leaders work by increment."

'Fourth Blueprint' organisational forms are loosely coupled networks and alliances (Limerick and Cunnington, 1993). They are 'collaborative' organisations. Then, Limerick and Cunnington, in the context of Total Quality Management, say:

"Quality Management is part of a complete paradigm shift in management and organisation."

Capra (1982, 1991) offers a useful explanation of 'paradigm shift':

"A social paradigm is a constellation of concepts, values, perceptions and practices shared by a community that forms a particular vision of reality that is the basis of the way the community organises itself. It is necessary for a paradigm to be shared by a community. A single person can have a world view, but a paradigm is shared by a community."

A paradigm shift then, is a complete change in perceptions, values, concepts and practices shared by the people comprising an enterprise.

What is the nature of the 'complete paradigm shift in management and organisation' required for a successful TQM intervention? What do practical managers have to do to negotiate it?

Limerick and Cunnington (1993), adapting the work of Ansoff (1990), make the point that contemporary organisations must be able to successfully "handle" competitive and entrepreneurial cultures. This has led to 'dual culture' and 'dual structure' organisations:

“One way to keep the benefits of competitive or efficiency-oriented organisations and to get some benefits of entrepreneurial cultures at the same time is to attempt to adopt both forms of organisation within or next to each other.”

Today’s managers face *surprise*ful, *discontinuous* *unpredictable* change. For many bewildered business persons, what they’ve experienced in the past has not prepared them for the future.

“Put together all the independent research conducted by consulting firms Arthur D. Little, Ernst & Young, Rath & Strong, McKinsey & Co., and A. T. Kearney, and you come up with the conclusion that only about one-fifth - at best one third - of TQM programmes in the United States and Europe have achieved ‘significant’ or even ‘tangible’ improvements in quality, productivity, competitiveness or financial returns.

This is a frightening conclusion given the hype that has accompanied TQM for years. It’s even more serious given the fact that three-quarters of reasonably sized American firms claim to have invested in some form of TQM” (Harari, 1993).

9.30.1. Needs Assessment for Total Quality and Personal Accomplishment

Conventional approaches to implementing **TQM** are procedural and task-based, so are not able to penetrate the *hearts and minds* of people. Cost-effective system design for **TQM** must start with **needs assessment** based not on behavioural (task-based) approaches, but on cognitive (information-processing) approaches to defining needs.

Kaufman (1991) advises on needs assessment for **‘Total Quality Plus’**, his label for Quality concerned with:

“the current and future survival, health, well-being, self-sufficiency and quality of life of the world in which we and our clients live.”

“... We know that we’d like everyone in the organisation to subscribe to the same vision: that of a totally delighted customer. We know that good intentions and glittering generalities are not enough to deliver success. We have to be specific. We have to define quality objectives, develop criteria for measuring accomplishments and identify what has to be done to get us from where we are to where we want to go.

Finally, we’re beginning to figure out that all of this makes sense only if we can push the organisation and its people beyond a state of simple, ticket punching compliance with arbitrary, process-oriented quality guide-lines.

What don't we know about TQM? We don't know how to hook it to a vision that goes beyond that of a 'satisfied' customer to encompass a customer who is not only satisfied with our products, but also is 'well-served' by them in ethical, social and environmental terms."

Professional system developers are concerned to produce ethical, social and environmental outcomes that are demonstrably valid and reliable from the systems they design. Cost-effective system design for TQM always starts with an information-processing approach to defining needs:

"A need is a discrepancy between the way things ought to be and the way things are. A goal is a statement of what ought to be. It follows that needs assessment is the process of determining what ought to be (goals) and measuring the amount of discrepancy between what ought to be and what actually is (needs). ... needs assessment is the process of determining goals, measuring needs and establishing priorities for action." (Burton and Merrill, 1977).

"Unlike a task analysis, needs assessment is concerned with determining goals and identifying discrepancies between goals and the status quo. It is the process of determining the gap in results between "what is" and "what should be". (Hunt, 1986).

"Rather than rushing to use old and familiar methods (including ones we notice others employing), we can select techniques on the basis of the costs and benefits that they will deliver. Only after we've settled on the needs we must address should we begin to select the best ways and means to achieve TQM." (Kaufman, 1993).

Product and Service Quality may not be meaningfully addressed without an appropriate needs assessment to define the nature of the *"stated or implied needs"* of both internal and external customers of a company.

It is now possible to under-pin and focus the commitment necessary for TQM with rigorous industry-wide abilities-based needs assessment procedures. Hunt (1986) offers an appropriate curriculum development, instructional delivery and evaluation model well developed cross-culturally over two decades. Such a needs assessment provides Quality information for managing human performance for continuous improvement in knowledge management structures. It produces relevant goals, valid occupational competency specifications and valid, reliable domain-referenced criteria for evaluation.

Environmental turbulence profoundly affects organisational structuring for safe, quality and thus productive performance.

Each and every organisation is unique; no two organisations are the same. Different organisations face different degrees of environmental uncertainty. Modern managers must understand that structural design is a major tool they can utilise to minimise the impact of uncertainty.

Discontinuous environmental change requires contemporary managers to be able to revise culture, structure, systems and rewards. They must know how to respond to surprising, unpredictable environmental turbulence. As leaders and stewards (Senge, 1990) managers must be able to adjust the way they manage. As systems designers (Senge, 1990) they must be able to adapt company structure to survive let alone prosper.

Capra (1991) and his associates find that at global level there are “*manifestations of a paradigm shift from self assertion to integration.*” There is:

“an over-emphasis on self-assertion. There has to be a better balance. Our perceptions and thinking must shift from analysis to synthesis; linear thinking to non-linear thinking; rational to intuitive; reductionism to holism.

Our values must shift from competition to cooperation; domination to partnership; expansion to conservation; quantity to quality.”

Capra (1991) concludes:

“This means moving from the organisational hierarchy through which domination is practised to the network, and exercising expert and referent power.”

Moving from value systems regulated by competition, domination, expansion and quantity, to cooperation, partnership, conservation and Quality means implementing new thinking and values.

So new systemic perspectives are needed. These issues have been focused in the context of ethical personal growth, competence and institutional effectiveness with what Senge (1990) calls the learning organisation and Peters (1992) the knowledge management structure (KMS).

Limerick and Cunnington (1993) support these views in justifying the “*emergence of the new organisation - the network*”. They trace the emergence of the Fourth Blueprint networked organisation (see the table on the next page) as the appropriate knowledge management structure for Total Quality in an Era of Discontinuity.

Limerick and Cunnington (1993) explain the meaning of ‘Blueprint’:

“Managers carry in their heads ‘frames of reference’, ‘cognitive maps’ or ‘mindsets’ that profoundly affect their managerial actions.

We have come to call these mindsets managerial ‘blueprints’ to stress that they are not just passive ways of understanding the managerial world - they are images of the way that organisations ought to be managed, and they directly affect managerial choice.

They are partly descriptive, partly normative sets of beliefs and assumptions, organised into coherent cognitive and affective frameworks, which affect managers’ perceptions of their worlds and frame their managerial actions.”

From First to Fourth Blueprint Organisations (Limerick and Cunningham, 1993)

	First Blueprint	Second Blueprint	Third Blueprint	Fourth Blueprint
	‘Classical’	‘Human’	‘Systems’	‘Collaborative’
Organisational Forms	Functional Mechanistic	Interlocking Matrix Organic	Contingency Divisional	Loosely coupled networks and alliances
Management Principles	Hierarchy	Supportive relationships	Differentiation	Empowerment, collaborative individualism
Managerial Processes/ Forms	Management functions	Democratic leadership	Open systems analysis	Management of meaning
Managerial Skills	Person-to-person control	Goal-setting facilitation	Rational/ Diagnostic	Empathetic Proactive

In the context of pursuing Quality in collaborative, networked knowledge management structures, strategic management focuses on the management of meaning - of vision, values, mission and identity - right through the enterprise. This management practice is at the roots a new organisational mindset during times of organisational renewal and transformation. Pascale (1990) asserts:

“We must break the chains of the old mindset if we are to grapple successfully with the task of managing adaptive organisations.”

For other writers, for example Senge (1990), Argyris and Schön (1978), mindsets are ‘mental models’ which must be managed. Deeply entrenched dysfunctional mental models, existing below the level of awareness, ‘*too deep for words*’ lead to what Argyris and Schön call ‘*skilled incompetence*’. This prevents people and thus organisations from developing as networked knowledge management structures for continuous learning and improvement.

Three perspectives of human enterprise must be addressed and integrated to move a Company from the traditional hierarchical pyramid to a Fourth Blueprint networked structure suitable for the successful management of continuous improvement for Quality performance:

- the **design of the Company** as an information-processing system tuned to its environments;
- the **needs and capabilities of the Company people** who must be regarded as the Company’s internal customers and the most valuable asset the Company has; and
- the **needs of the Company's valued external customers** in the market place.

Contemporary organisations, like the people who comprise them, are dynamic information-processing systems. They are dynamic webs of processes resulting from a network of connected and interdependent vision inspired, mission related goals. These processes give competent companies the structure which enables their people not only to perform, but to develop and grow.

Company structure can be made to emerge from an effective communication system. That is, company structure should follow its business and communication practices, not the other way around. When managers understand the role of communication in organisations and its management, they integrate the flows of goal-directed interpersonal communication and electronic information to establish an organisational intelligence system.

Managers are thus able to structure the company as a purposeful, networked system better to control the Quality of the outputs of its processes. Structuring the organisation as a network facilitates the development of interdependent, collaborative teams and *value-chains* which, if transactions costs are kept down, add value and improve Quality. The problem of containing transactions costs between internal customers across Company networks may be reduced by alliances:

“If a firm is able to obtain an arrangement whereby it ‘farms out’ activities to the most efficient supplier, keeps for itself that activity in which it has a comparative advantage, and lowers transactions costs, a superior mode of organisation emerges: the strategic network.” (Jarillo, 1988).

Service and manufacturing firms, not-for-profit organisations and institutions in the public sector all face a service imperative in today’s business environments.

9.31. Appendix Three “Foundations Of Morale”

In his book *Defeat into Victory*, Field Marshal Lord Slim describes how, when considering his responsibilities as a leader of a great army, he analysed the concept of morale:

“So when I took command, I sat quietly down to work out this business of morale. I came to certain conclusions, based not on any theory that I had studied, but on some experience and a good deal of hard thinking. It was on these conclusions that I set out consciously to raise the fighting spirit of my army.

Morale is a state of mind. It is that intangible force which will move a whole group of men to give their last ounce to achieve something, without counting the cost to themselves; that makes them feel they are part of something greater than themselves. If they are to feel that, their morale must if it is to endure - and the essence of morale is that it should endure - have certain foundations. These foundations are spiritual, intellectual, and material, and that is the order of their importance. Spiritual first, because only spiritual foundations can stand real strain. Next, intellectual, because men are swayed by reason as well as feeling. Material last - important, but last - because the very highest kinds of morale are often met when material conditions are lowest.

I remember sitting in my office and tabulating these foundations of morale something like this:

1. Spiritual

- *There must be a great and noble object.*
- *Its achievement must be vital.*
- *The method of achievement must be active, aggressive.*
- *The man must feel that what he is and does matters directly towards the attainment of the object.*

2. Intellectual

- *He must be convinced that the object can be obtained; that it is not out of reach.*
- *He must see, too, that the organisation to which he belongs and which is striving to attain the object is an efficient one.*
- *He must have confidence in his leaders and know that whatever dangers and hardships he is called upon to suffer, his life will not be lightly thrown away.*

3. Material

- *The man must feel that he will get a fair deal from his commanders and from the army generally.*
- *He must, as far as humanly possible, be given the best weapons and equipment for his task.*
- *His living and working conditions must be made as good as they can be.*

It was one thing thus neatly to marshal my principles but quite another to develop them, apply them, and get them recognised by the whole army.”

9.31.1. Components Of Charisma For Transformational Leadership (Conger and Kunungo, 1987)

Tentative Hypotheses:

- “1. *The components of charismatic leadership are inter-related, and as such they form a constellation of components.*
2. *Leaders are charismatic when their vision is highly discrepant from the status quo yet remains within a latitude of acceptance for their followers.*
3. *Charismatic leaders may take on high personal risks, incur high costs, and engage in self-sacrifice to achieve a shared vision.*

4. *Charismatic leaders demonstrate expertise in transcending the existing order through the use of unconventional or extraordinary means.*
5. *Charismatic leaders engage in behaviours that are novel, unconventional and counter-normative, and as such, involve high personal risk or high probability of harming their own self-interest.*
6. *Charismatic leaders engage in realistic assessments of the environmental resources and constraints affecting the realization of their visions. They implement innovative strategies when the environmental resource-constraint ratio is favourable to them.*
7. *Charismatic leaders portray the status quo as negative or intolerable and the future vision as the most attractive and attainable alternative.*
8. *Charismatic leaders articulate their motivation to lead through assertive behaviour and expression of self-confidence, expertise, unconventionality, and concern for followers' needs.*
9. *Charismatic leaders' influence on their followers stems from the use of their personal idiosyncratic power (expert and referent) rather than the use of their position power (legal, coercive and reward) within the organisation.*
10. *Charismatic leaders exert idiosyncratic personal power over their followers through elitist, entrepreneurial, and exemplary behaviour rather than through consensus-seeking or directive behaviour.*
11. *Charismatic leaders act as reformers or agents of radical changes, and their charisma fades when they act as administrators (caretaker role) or managers (nudging role).*
12. *Contextual factors that cause potential followers to be disenchanted with the prevailing social order, or that cause followers to experience psychological distress, although not a necessary condition for the emergence of charismatic leaders, facilitate such emergence.*
13. *Under conditions of relative social tranquillity and lack of psychological distress among followers, the actions by a leader that foster or support an attribution of charisma, facilitate the emergence of that leader as a charismatic leader."*

9.31.2. Organisational Communication Flows (Sligo, 1988)

Focus :

Goal-setting and **goal-tracking** direct the flow of communication, information, decisions and work in organisations.

Downward Communication

Five types of information seem to be passed down from top and middle management:

- The dissemination of company goals, policies and procedures.
- Instructions on how to do the work.
- Information that explains how a person's job relates to other work done in the organisation.
- Information to subordinates about their performance.

Upward Communication

Unobstructed information passed from lower to higher organisational levels:

- Supplies the feedback to middle and top management which keeps them in touch with reality. It enables them to make timely adjustments to the required performance published in verifiable organisational goals and in work group/individual measurable objectives.
- Enhances staff morale.

Lateral Flows

Lateral (formal and informal) flows of information and communication at all levels:

- Get the work done, enabling the development of value-chains for Quality.
- Provide the basis for innovative input.
- Feed the vertical flows with information and decisions of high quality.
- Meet the socio-emotional needs of employees at all levels.

9.32. Appendix Four. Information & Communication Through Dynamically Networked Organisations

Notes On Informal Communication Networks

“Much of our communication behaviour involves others. Other people influence our frame of reference during the socialisation processes, and also provide ‘anchors’ for the attitudes and beliefs we hold throughout our life. Our relationship to others tends to evolve into and out of networks. Networks may be defined as regularly occurring communication transactions between two or more participants.”

(Hanneman and McEwan, 1975)

Five categories of *informal* organisational communication networks have been identified. They are:

1. **Information Networks** develop for obtaining general purpose work-related information, eg.,

“Let me know about that, because I think it might affect the budget revision I’m doing.”

“Did she decide to hold the next SIS meeting on Friday 13th or the following Monday?”

2. **Task Expertise Networks** develop for “*How do I do this job?*” information, eg.,

“I need your help to fill in this new claim form.”

“Will you please clarify my role in this Project.”

3. **Status Networks.** People at work prefer mainly to interact with others of the same organisational status:

“How do your managers find the new staff appraisal scheme working for their teams?”

“We’d better have that meeting in the Boardroom.”

4. **Social Networks.** Social networks develop to pass information via friendship groupings. Social and status networks share a lot of common ground, eg.,

“We’ll go and have a noggin in the Officer’s Mess.”

“We have to bring a plate to the Boss’s party on 1 April.”

“Did you hear what happened to Charlotte? Shall we go round to see if we can help?”

5. **The Grapevine Network.** The ‘grapevine’ develops to convey “hot”, immediate and not necessarily quite accurate information of personal interest, eg.,

“The accounts clerk said the Company’s moving to Lower Hutt in six months.”

“There’s to be an inquiry into the damage done at the office party.”

Probably, the most important function of such networks is that they enable us to *cope* better with formal organisations.

9.33. Appendix Five. Characteristics of Creative Leaders Knowles, 1980, 1983, 1990)

Knowles, the pioneer of adult learning, for which he coined the term ‘andragogy’, has the view that:

“One of the misconceptions in our cultural heritage is the notion that organisations exist purely to get things done. This is only one of their purposes; it is their work purpose. But every organisation is also a social system that serves as an instrumentality for helping people meet human needs and achieve human goals. In fact, this is the primary purpose for which people take part in organisations - to meet their needs and goals - and when an organisation does not serve this purpose for them they tend to withdraw from it. So organisations also have a human purpose. Adult education is a means available to organisations for furthering both purposes.” (Knowles, 1980).

9.33.1. Characteristics of ‘Educative’ Organisational Environments

Emphasising the need to build ‘educative’ environments in institutions to help people and thus the organisation learn, Knowles (1990) summarises the characteristics of ‘educative’ organisational environments.

“They can probably be boiled down to four basic characteristics:

- 1. respect for personality;*
- 2. Participation in decision-making;*
- 3. Freedom of expression and availability of information.*
- 4. Mutuality of responsibility in defining goals, planning and conducting activities and evaluating.*

In effect, an educative environment - at least in a democratic culture - is one that exemplifies democratic values, that practices a democratic philosophy.

A democratic philosophy is characterised by a concern for the development of persons, a deep conviction as to the worth of every individual, and faith that people will make the right decisions for themselves if given the necessary information and support. It gives precedence to the growth of people over the accomplishment of things when these two values are in conflict. It emphasises the release of human potential over the control of human behaviour. In a truly democratic organisation there is a spirit of mutual trust, an openness of communication, a general attitude of helpfulness and cooperation, and a willingness to accept responsibility, in contrast to paternalism, regimentation, restriction of information, suspicion, and enforced dependence on authority.”

9.33.2. Characteristics of Creative Leaders

Knowles regards social systems as human energy systems. He concludes (1983) that creative leaders in organisations:

“make things happen by releasing the energy of others. ... The highest function of leadership is releasing the energy of the people in the system and managing the processes for giving that energy (physical, intellectual, psychic, morals, artistic, technical, social) direction toward mutually beneficial goals.”

Drawing on the research, Knowles (1990) advances eight propositions regarding the characteristics of creative leaders:

1. *“Creative leaders make a different set of assumptions (essentially positive) about human nature from the assumptions (essentially negative) made by controlling leaders. Creative leaders have faith in people, offer them challenging opportunities and delegate responsibility to them.*
2. *Creative leaders accept as a law of human nature that people feel a commitment to a decision in proportion to the extent that they feel they have participated in making it. Creative leaders, therefore, involve their clients, workers, or students in every step of the planning process - assessing needs, formulating goals, designing lines of action, carrying out activities, and evaluating results (except perhaps in an emergencies).*
3. *Creative leaders believe in and use the power of self-fulfilling prophesy. They understand that people tend to come up to other people's expectations for them.*
4. *Creative leaders highly value individuality. They sense that people perform at a higher level when they are operating on the basis of their unique strengths, talents, interests and goals than when they are trying to conform to some imposed stereotype. Creative leaders ... see the purpose of all life activities - work, learning, recreation, civic participation, worship - to be to enable each individual to achieve his or her full and unique potential.*
5. *Creative leaders stimulate and reward creativity. They understand that in a world of accelerating change, creativity is a basic requirement for the survival of individuals, organisations, and societies. They exemplify creativity in their own behaviour and provide an environment that encourages and rewards innovation in others.*
6. *Creative leaders are committed to a process of continuous change and are skilful in managing change. They understand the difference between static and innovative organisations and aspire to make their organisations the latter.*

7. *Creative leaders emphasise internal (intrinsic) motivators over external (extrinsic) motivators - such as achievement, recognition, fulfilling work, responsibility, advancement and growth.*
8. *Creative leaders encourage people to be self-directing. They sense intuitively what researchers have been telling us for some time - that a universal characteristic of the maturation process is movement from a state of dependency toward states of increasing self-directedness."*

Knowles concludes:

"Creative leadership is that form of leadership which releases the creative energy of the people being led";

which is relevant for leader-managers developing their role of teacher/coach/facilitator.

It seems that to fulfil their role of *teacher/coach/facilitator* with their people, managers must be competent as adult educators. With this instructional know-how, it is likely that they will more easily elicit the creative synergy which results in generative learning for competent individual, team and organisational performance.

9.34. Appendix Six. Differences Between Marae Management And Pakeha Management (Tremaine, 1990)¹

Mission:

- M: The **kaupapa** is discussed by all and the strategy for reaching the objectives is understood and is the responsibility of each group member.
- P: The **mission** is often decided by top management and communicated downwards to other members of the organisation.

Leaders:

- M: Leaders are responsible to the group they lead.
- P: Leaders are responsible to themselves and upper management.

Management Style:

- M: Managers tend to lead from behind, encouraging and supporting others but remaining in the background.
- P: Managers feel that they are not managing unless they are highly visible.

Decisions:

- M: Decisions are made by consensus.

P: Decisions are made by management or by the majority.

Time Management:

M: People and group processes are able to take the time that they require.

P: Time is tightly structured and people are often seen as time wasters.

Prized Attributes:

M: Humility, commitment to serve others.

P: Personal ambition, confidence.

Maori Leadership Style?

Given the differences between Maori and Pakeha management styles, consider this comment about Maori leadership:

“Maori leadership itself needs to be understood. Educational success and personal power or wealth are often seen by Maori people as qualifications for more effective resourcing of a tribe, not necessarily for leading it.

Tribal leaders operate differently from leaders chosen by a show of hands or according to their literary skills. Usefulness to their people depends not only on their ‘mana’ (which in turn derives from tribal recognition and concurrence) but also on mutual respect, an obligatory commitment to the advancement of the tribe and an ability to operate a consensus model of decision-making.”²

- 1 Tremaine, M., (1990). Sharing from the baskets of knowledge. In F. X. Sligo, (Ed.), Business Communication: New Zealand Perspectives. (pp. 48-54). Palmerston North: Software Technology NZ Ltd.
2. Staff (1988, 2Ed., August). The Treaty of Waitangi and Social Policy. Discussion Booklet No. 1, The Royal Commission on Social Policy. Wellington: Office of the Race Relations Conciliator, p6.

10. GLOSSARY OF TERMS

The Glossary of Terms serves *to manage meaning* and *to facilitate knowledge transfer*. The definitions are indexed alphabetically..

This Glossary serves to manage meaning and *to facilitate knowledge transfer*. The definitions that follow are indexed alphabetically.

10.1. Accident

An **accident** is defined as an event that causes any person to be harmed; or in different circumstances, might have caused any person to be harmed. (HSE Act, 1992).

10.2. Detail and Dynamic Complexity

Detail complexity is the information complexity associated with many variables: eg. following instructions to assemble a machine; taking an inventory. Detail complexity is to do with cause and effect in close proximity and is symptomatic of linear thinking.

Dynamic complexity is found in situations where cause and effect are subtle and where the effects over time of interventions are not obvious: eg. when an action has one set of consequences locally and a very different set of consequences in another part of a system; improving quality, lowering total costs and satisfying customers in a sustainable manner.

(Senge, 1990)

10.3. Human Error

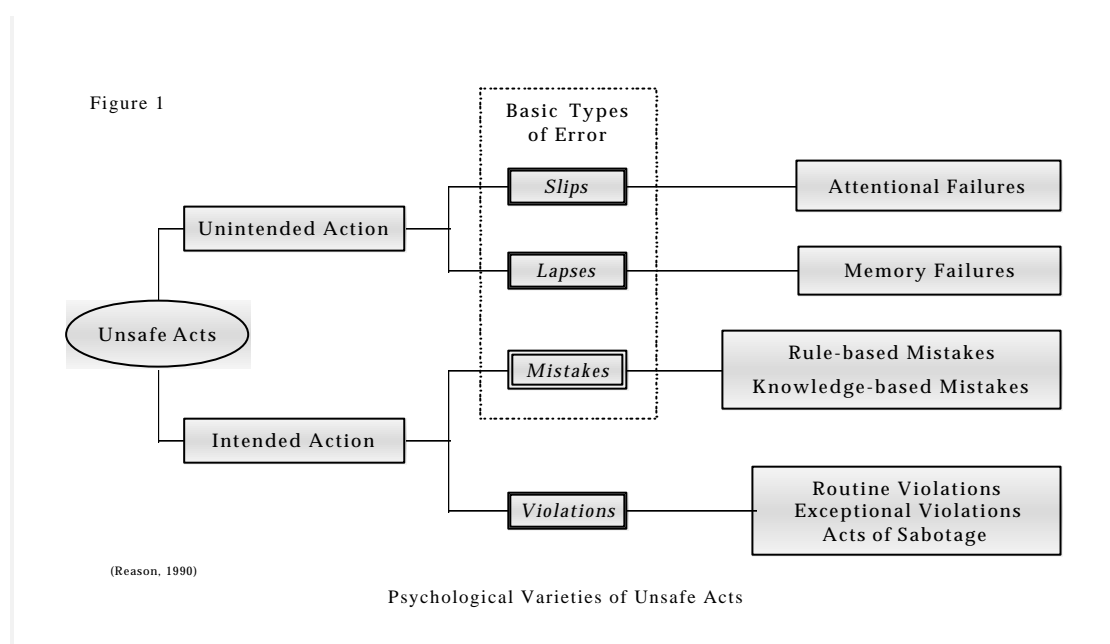
Human Error is a generic term that includes all occasions in which a planned sequence of mental or physical activities fails to achieve its intended outcome, and when these failures cannot be attributed to chance (Reason, 1990).

Therefore, human errors are associated with intentional activity and failures to achieve goals.

The basic types of human error are classified depending on whether they result from unintended or intended action as *slips*, *lapses*, *mistakes* and *violations*. Three levels of human performance are skill-based, rule-based and knowledge-based. *Slips* and *lapses* are skill-based, while *mistakes* can be either rule-based or knowledge-based (Rasmussen, 1986; Reason, 1990). The likelihood of human error is affected by the state of arousal of individuals (see Attachment 1 - **Stress and Coping**). Other well-known causes of error are fatigue, poor health, drugs, incompetence, working conditions; and, not widely known, hazardous attitudes, and *fallible decisions* by management.

The risk of *organisational accidents* is reduced in *learning organisations*, the popular name for *knowledge management structures* or *generative organisations* (Westrum, 1988; Reason, 1990).

“Generative organisations are characterised by a high degree of ostensibly irregular or unconventional activity in furthering their goals. They set targets for themselves beyond ordinary expectations, and fulfil them because they are willing to do unexpected things in unexpected ways. They emphasise results rather than methods, and value substance more than form. Hazards tend to be quickly discovered and neutralised because lower-level personnel have both permission to see and permission to do.”



10.4. Human Factors

Because human beings have limitations in working (short-term) memory and attentional limitations when processing information (Wickens, 1985), individuals can make errors unintentionally - *slips*, *lapses* and *mistakes* - while some intentionally *violate* (Reason, 1990). Because organisations comprise groups of people, errors made by individuals and teams within organisations directly and indirectly affect the safety and efficiency of human performance in the work-place. Thus any project concerned with safety at work must be concerned with the state of knowledge in the field known as *Human Factors*.

Human Factors has many definitions, for example, Edwards (1985) and Hawkins (1987) say:

“Human Factors is about people. It is about people in their working and living environments. It is about their relationship with machines and equipment, with procedures and with the environment about them. And it is also about their relationships with other people. Human factors is concerned to optimise the relationship between people and their activities by the systematic application of the human sciences, integrated within the framework of systems engineering. Its twin objectives can be seen as effectiveness of the system, which includes safety and efficiency, and the well-being of the individual.”

McCormick and Sanders (1983) define Human Factors with the help of three interrelated dimensions - *focus, objectives and approach*.

The *focus of Human Factors* relates to:

- The design and creation of human-made objects, products, equipment, facilities and environments that people use;
- The development of procedures for carrying out tasks and work;
- The provision of services to people;
- The evaluation of the things people use in terms of their suitability for people.

The *objectives of Human Factors* relates to:

- enhancing the effectiveness and efficiency with which work and other activities is carried out by people;
- maintaining and enhancing certain desirable human values such as safety, health, aesthetic value, etc.

The main *approach of Human Factors* is the systematic application of relevant information about human abilities, characteristics, behaviour (psycho-social) and motivation, and communication patterns in the execution of work and social interactions

Mancuso (1997) says Human Factors is:

“The multi-disciplinary science focussing on systematic and comprehensive assessment and improvement of human performance.”

The following definition of **Human Factors** (Kosakai, 1997) has been selected to be used for this project because, cross-culturally, it has been found to be easy to understand:

“A multi-disciplinary effort to generate and compile information about human capabilities and limitations and apply that information to equipment, system, facilities, procedures, jobs, environments, training, staffing, and personnel management for safe, comfortable human performance.”

This definition of Human Factors is that adopted after much research by the Federal Aviation Authority of the USA.

According to Mancuso (1997):

“There are many disciplines associated with human performance. To be a credible human performance resource, individuals and teams concerned with human factors should have the capability to address the primary disciplines integral to Human Factors. These are: Psychology, Physiology, Sociology, Biomechanics, Systems Science and Management Science.”

To shape human performance, information sourced in the primary human factors disciplines must be integrated into *occupational knowledge-bases* for safe and efficient personal, team and enterprise performance by cognitive models of occupational expertise (Engeström, 1992) utilising the processes of instructional systems development (ISD) based on cognition (Hunt, 1986, 1997).

10.5. Knowledge Base (Long Term Memory)

An individual's *knowledge base* is the integrated total of that individual's education, training and experience stored in long term memory as structured information. The knowledge base of accomplished people is a vast repository of declarative and procedural knowledge units (see Attachment 3 - **Executive Development for Managers**).

In reviewing 30 years of research into expertise, Glaser (1986), Glaser and Chi (1988), Glaser and Bassok (1989) conclude that demonstrations of high levels of human competence revealed strong interactions between knowledge structures stored in long-term memory (knowledge base) and the processes of reasoning and problem-solving.

Competent, capable people performing productively, organise clusters of declarative knowledge (*“I know about that”*) and procedural knowledge (*“I know how to do that”*) which they readily access and use with their superior monitoring and self-regulation skills. This finding indicates that the nature of competent occupational performance rests on the human *capability* to interrogate and process information from human and technical systems within the context of the demands of the situation.

Occupational knowledge bases are generic and relatively stable, changing slowly as the nature of occupational expertise changes (see Attachment 3). It is now possible to identify the nature of occupational knowledge bases by occupational needs assessment (Hunt, 1997).

The properties of *human long-term memory* or *knowledge base* are that humans utilise it unconsciously, and that it is:

- apparently unlimited;

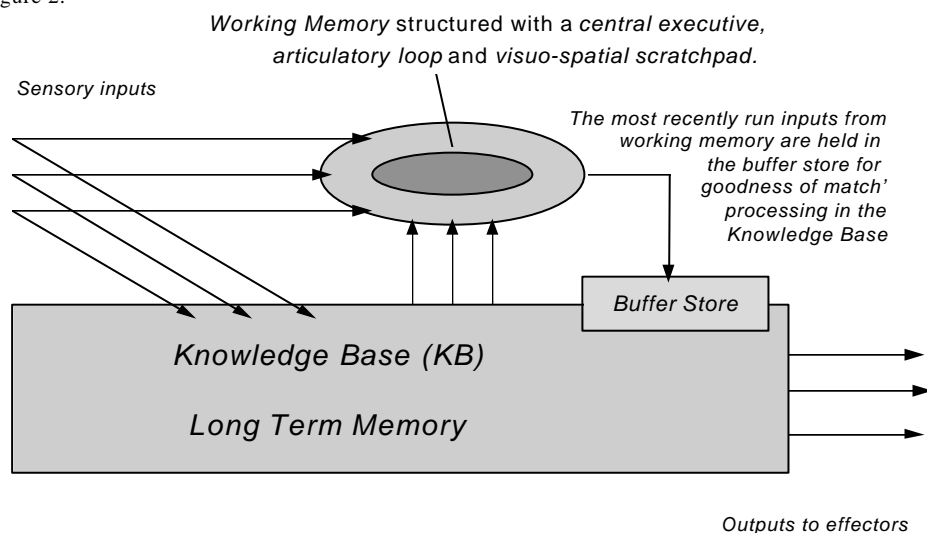
- fast, effortless and powerful;
- automatic in operation;
- characterised by two basic heuristics.

The ‘two basic heuristics’ humans utilise are labelled: *similarity-matching*, which is matching like-to-like, and *frequency-gambling*, which is resolving multiple matches in favour of most frequent items.

“Such fundamental aspects of experience as the degree of likeness between events and their frequency of prior occurrence have been termed intuitive concepts. Similarity and frequency information appear to be processed automatically without conscious effort, or perhaps even without awareness, regardless of age, ability, cultural background, motivation or task instructions. There is a strong case for regarding them as being the computational primitives of the cognitive system.”

(Reason, 1990)

Figure 2.



A Design for a Fallible Machine (Reason, 1990)

10.6. Working Memory (Short Term Memory)

See Figure 2. According to Reason (1990), *working (or short-term) memory* has three components:

- a *central executive* that acts as a limited (information-processing) capacity control resource closely associated with both attention and consciousness and, controlled by the *central executive*;
- two ‘slave systems’ - the *articulatory loop* and the *visuo-spatial scratchpad* - which process different kinds of information. Both structures have a *passive store* for information

and the capability to *actively rehearse* that information. Both structures can function independently.

The *articulatory loop* passive store is phonological and accessed by auditory speech inputs. The *visuo-spatial scratchpad* holds and rehearses visuo-spatial material being processed by *working memory*.

The properties of *working memory* are that humans utilise it consciously, and that it is:

- selective and resource-limited;
- slow, laborious and serial;
- intermittently analytical;
- computationally powerful.

11. REFERENCES

- Achterberg, J., and Lawlis, F., (1980). **Bridges of the Body-Mind: Behavioural Approaches to Health Care.** Champaign, Ill.: Institute for Personality and Ability Testing.
- Achterberg, J., and Lawlis, F., (1982). Imagery and health intervention. **Topics Clinical Nursing**, 3(4):55.
- Adair, J., (1973). **Action Centred Leadership.** London: McGraw-Hill.
- Adair, J., (1984). **The Skills of Leadership.** Aldershot: Gower Publishing Company.
- Ancona, D. G., (1991). The **Changing Role of Teams in Organisations: Strategies for Survival.** The International Center for Research on the Management of Technology. Sloan School of Management, MIT. Working Paper #37-91.
- Ansoff, H. Igor, (Summer, 1990). General management in turbulent environments. From **The Practising Manager**, Vol II, No 1, pp.6-27.
- Argyris, C., and Schön, D., (1978). **Organisational Learning: A Theory-in-Action Perspective.** Reading, Mass: Addison-Wesley.
- Barnard, C. I., (1938). **The Functions of an Executive.** Cambridge, Mass: Harvard University Press.
- Bass, B. M., (1985). **Leadership and Performance: Beyond Expectations.** New York: The Free Press.

- Bass, B. M., and Avolio, B. J., (1990). Developing transformational leadership: 1992 and beyond. **Journal of European Industrial Training**, 14 (5).
- Berlo, D. K., (1975). The context for communication. In Hanneman, G. J., and McEwan, W. J., **Communication and Behaviour**. Reading, Mass: Addison-Wesley.
- Benner, P. E., (1984). **From Novice to Expert: Excellence and Power in Clinical Nursing Practice**. Menlo Park, Cal: Addison-Wesley.
- Benner, P. E., and Wrubel, J., (1989). **The Primacy of Caring, Stress and Coping in Health and Illness**. Menlo Park, Cal: Addison-Wesley.
- Bohm, D., and Peat, F. D., (1987). **Science, Order and Creativity**. New York: Bantam Books.
- Boone, L. E., and Bowen, D. D., (1987). **The Great Writings in Management and Organisation Behavior**. NY: Random House.
- Bowen, D. D., and Lawler, E. E., (1992). The empowerment of service workers: what, why, how and when? **Sloan Management Review**, Spring, 1992; Sloan School of Management, MIT.
- Brown, J. S., Collins, A., and Duguid, P. (1989). Situated cognition and the culture of learning. **Educational Researcher**, 18(1).
- Burns, J. M., (1978). **Leadership**. New York: The Free Press.
- Burrell, G., and Morgan, G., (1979). **Sociological Paradigms and Organisational Analysis**, London: Heinemann Educational Books.
- Burton, J. K., and Merrill, P. F., (1977). In L. J. Briggs, (Ed.), **Instructional Design, Principles and Applications**. Englewood Cliffs, NJ: Educational Technology Publications.
- Campbell, I. B., (1987). **Legislating for Work-place Hazards in New Zealand: Overseas Experience and Our Present and Future Needs**. Palmerston North: Occupational Health and Safety Unit, Massey University.
- Campbell-Hunt et al., (1993). **Islands of Excellence? A Study of Management in New Zealand**. Wellington: New Zealand Institute for Economic Research.
- Campbell-Hunt, C., and Corbett, L., (1996). **A Season of Excellence?** Wellington: New Zealand Institute for Economic Research.
- Capra, F., (1982). **The Turning Point. Science, Society and the Rising Culture**. New York: Simon & Schuster.

- Christensen, J. C., (1990). **Nursing Partnership, a Model for Nursing Practice.** Wellington: Government Printer.
- Conger, J. A., and Kanungo, R. N., (1987). Toward a behavioural theory of charismatic leadership in organisational settings. **Academy of Management Review**, Vol 12, No 4, 637-647.
- Conger, J. A., (1989). Leadership: the art of empowering others. **The Academy of Management Executive**, 1989, Vol III, No 1.
- Covey, S. R., (1989). **The 7 Habits of Highly Effective People.** Melbourne: Information Australia.
- Covey, S. R., (1990). **Principle-Centered Leadership.** New York: Simon & Schuster.
- Covey, S. R., (1996). Three roles of the leader in the new paradigm. In F. Hesselbein, M. Goldsmith and R. Bechar, (Eds.), **The Leader of the Future.** The Drucker Foundation. San Francisco, Cal: Jossey-Bass, Inc.
- Crook, C., (1991-96). **What's New in Motivation?** Wellington: The New Zealand Leader-Manager Programme.
- Crook, C., (1993-96). **Total Quality Plus: Upside-down, Inside-out.** Wellington: The New Zealand Leader-Manager Programme.
- Crook, C., (1995). **A Proposal for Aviation Managers: Education and Training for Modern Aviation; Human Factors and Beyond.** Palmerston North: School of Aviation, Massey University.
- Crook, C., (1998a). **Executive Development for Managers.** Wellington: Productivity
- Crook (1998b). **Communication Within Dynamically Networked Human Activity Systems.** Wellington: Productivity Plus.
- Cushing, S., (1994). **Fatal Words: Communication Clashes and Aircraft Crashes.** Chicago: University of Chicago Press.
- Damasio, A. (1994). **Descartes' Error: Emotion, Reason and the Human Brain.** NY: Grosset/Putnam.
- Dewe, P. J. and Guest, D. E., (1990). Methods of coping with stress at work: a conceptual analysis and empirical study of measurement issues. **Journal of Organisational Behaviour**, Vol 11, 135-150.

- Dismukes, R. Key, (1994). Aviation human factors research in US universities: potential contributions to national needs. In R. S. Jensen, (Ed.) **The International Journal of Aviation Psychology**, Vol 4 (4), 315-331.
- Dixon, N. (1992). Organisational learning: a review of the literature with implications for HRD professionals. **Human Resource Quarterly**, 3 (1), pp. 29-49.
- Dodgson, M. (1993). Organisational learning: a review of some literatures. **Organisational Studies**, 14 (3), pp. 375-394.
- Downs, C. W., (1977). The relationship between communication and job satisfaction, in Huseman, R.C., Logue, C.M. and Freshley, D.L., (eds.) **Readings in Interpersonal and Organisational Communication**. Boston: Holbrook.
- Dreyfus, S.E., and Dreyfus, H.L., (1979). **The Scope, Limits and Training Implications of Three Models of Aircraft Pilot Emergency Response Behaviour**. (AFSC), USAF (Grant AFOSR-78-3594), University of California at Berkeley.
- Dreyfus, S.E., and Dreyfus, H.L., (1980). **A Five Stage Model of the Mental Activities involved in Direct Skill Acquisition**. (AFSC), USAF (Contract F49620-79-C-0063), University of California at Berkeley.
- Dreyfus, H. (1993). Heidegger's critique of the Husserl/Searle account of intentionality. **Social Research**, 60.
- Durie, Eddie, (1990). **The Treaty of Waitangi: The symbol of our life together as a nation**. Wellington: Race Relations Office.
- Engeström, Y., (1992). Interactive expertise, studies in distributed working intelligence. **Research Bulletin 83**. Department of Education, University of Helsinki.
- Edwards, E., (1985). **Human Factors in Aviation**. Aerospace, 12.
- Engel, S. E., and Granda, R. E., (1975). **Guidelines for man/display interfaces**. (Tech. Report 00.2720). Poughkeepsie, NY: IBM.
- Engeström, Y., (1992). Interactive expertise, studies in distributed working intelligence. **Research Bulletin 83**. Department of Education, University of Helsinki.
- Falk, R., (1988). In Adair, J., **Developing Leaders**. London: McGraw-Hill.
- Ferguson, L. M., (1992). Teaching for Creativity. **Nurse Educator**, Vol 17, No 1, Jan/Feb 1992.

- Fiedler, F. E., (1964). A contingency model of leadership effectiveness. In L. Berkowitz (ed.), **Advances in Experimental Social Psychology**, Vol 1, New York: Academic Press.
- Fiedler, F. E., (1967). **Theory of Leadership Effectiveness**. New York: McGraw-Hill.
- Fiedler, F. E., (1987). The contribution of cognitive resources to organisational performance. In C. F. Graumann and S. Moscovici, (eds.), **Changing Conceptions of Leadership**. New York: Springer-Verlag.
- Fiedler, F. E., and Chemers, M. M., (1984). **Improving Leadership Effectiveness: The Leader Match Concept**. 2 ed. New York: John Wiley.
- Fiedler, F. E., and House, R. J., (1988). Leadership theory and research: a report of progress. In C. L. Cooper and I. Robertson, (eds.), **International Review of Industrial and Organisational Psychology**. John Wiley & Sons, Ltd., 73-92.
- Foushee, H. C., (1981). The role of communications, socio-psychological and personality factors in the maintenance of crew co-ordination. In R. S. Jensen, (ed.), **Proceedings of the First Symposium on Aviation Psychology**. Columbus, OH: Ohio State University.
- Gagné, R. M., (1977). **The Conditions of Learning**. New York: Holt, Rinehart and Winston.
- Gardiner, Wira, (1993). Bi-culturalism in a multi-ethnic/multi-cultural society. **Multi-Ethnic Aotearoa New Zealand: Challenge of the Future**. Wellington: The New Zealand Federation of Ethnic Councils Inc., 1993 National Conference, October.
- Garratt, B., (1996). **The Fish Rots From The Head. The Crisis in our Boardrooms: Developing the Crucial Skills of the Competent Director**. London: Harper-Collins.
- Garvin, D. A., (1993). Building a learning organisation. **Harvard Business Review**. July-August.
- Gibb, J. R., (1961). Defensive communication. **The Journal of Communication**, September, 1961.
- Gilbert, T. F., (1978). **Human Competence: Engineering Worthy Performance**. New York: McGraw-Hill.
- Ginnett, R. C., (1987). The formation process of airline flight crews. In R. S. Jensen, (Ed.), **Proceedings of the Fourth Symposium on Aviation Psychology**. Columbus, OH: Ohio State University.
- Glaser, R., (1986). **On the Nature of Expertise**. Pittsburg, Pennsylvania: University of Pittsburg Learning Research and Development Center.

- Glaser, R., and Bassok, M., (1989). Learning theory and the study of instruction. **Annual Review of Psychology**, 40.
- Glaser, R. and Chi, M. T. H., (1988). Overview. In M. T. H. Chi, R. Glaser and M. J. Farr (Eds.), **The Nature of Expertise**. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Goleman, D. (1995). **Emotional Intelligence**. London: Bloomsbury Publishing.
- Goldhaber, G.M., (1979). **Information Strategies: New Pathways to Corporate Power**. Englewood Cliffs, NJ: Prentice-Hall.
- Goldstein, A. P., and Sorcher, M., (1974). **Changing Supervisory Behaviour**. New York: Pergamon.
- Goleman, D. (1995). **Emotional Intelligence**. London: Bloomsbury Publishing.
- Graen, G. and Cashman, J. F., (1975). A role making model of leadership in formal organisations: a developmental approach. In J. G. Hunt, and L. L. Larson, (eds.), **Leadership Frontiers**. Carbondale, Ill: Southern Illinois University Press.
- Graecunas, V. A., (1974). Relationships in organisations. In L. Gulick, and L. Urwick, (eds.), **Papers on the Science of Administration**, 2E., New York.
- Grönroos, C., (1990). **Service Management and Marketing: Managing the Moments of Truth in Service Competition**. Singapore: Maxwell Macmillan Publishing.
- Hampden-Turner, C., (1990). **Charting the Corporate Mind: Graphical Solutions to Corporate Conflicts**. New York: Free Press.
- Hampden-Turner, C., (1992). **Creating Corporate Culture: From Discord to Harmony**. Reading, Mass: Addison-Wesley.
- Handy, C., (1989). **An Age of Unreason**. London: Hutchison Business Press.
- Handy, C., (1996). Three new language of organising and its implications for leaders. In F. Hesselbein, M. Goldsmith and R. Bechar, (Eds.), **The Leader of the Future**. The Drucker Foundation. San Francisco, Cal: Jossey-Bass, Inc.
- Hanneman, G. J., and McEwan, W. J., (1975). **Communication and Behaviour**. Reading, Mass: Addison-Wesley.
- Harari, O., (1993). Ten reasons why TQM doesn't work. **Management Review**, January.
- Hawkins, F. H., (1987). **Human Factors in Flight**. Aldershot: Gower Technical Press.
- Hersey, P., and Blanchard, K., (1982). **Management of Organisational Behaviour: Utilising Human Resources**. Englewood Cliffs, NJ: Prentice Hall.

- Hesselbein, F., (1996). The 'how to be' leader. In F. Hesselbein, M. Goldsmith and R. Bechar, (Eds.), **The Leader of the Future**. The Drucker Foundation. San Francisco, Cal: Jossey-Bass, Inc.
- Hill, R., Bullard, T., Capper, P., Hawes, K., and Wilson, K., (1998). **Learning about Learning Organisations: Case Studies of Skill Formation in Five New Zealand Organisations**. Lincoln: The Centre for Research on Work, Education and Business, Ltd.
- Hofstede, G., (1980). **Culture's Consequences**. Cal: Sage.
- Hofstede, G., (1994). **Cultures and Organisations: Software of the Mind**. London: HarperCollins.
- House, R. J., (1971). Path-goal theory of leader-effectiveness. **Administrative Science Quarterly**, 16.
- House, R. J., (1977). A 1976 theory of charismatic leadership. In J. G. Hunt, and L. L. Larson, (eds.), **Leadership: The Cutting Edge**. Carbondale, Ill: Southern Illinois University Press.
- HSE Act (1992). **Health and Safety in Employment Act, 1992**.
- Huber, G. (1991). Organisational learning: the contributing processes and the literature. **Organisational Science**, 2 (1).
- Hunt, G. J. F., (1984b). NEBEAT - the systems approach updated. **PLET - Programmed Learning and Educational Technology** 21.
- Hunt, G. J. F., (1986). Needs assessment in adult education: tactical and strategic considerations. **Instructional Science** 15.
- Hunt, G. J. F., (1997). Instruction and evaluation: design principles in instructional design. In G. J. F. Hunt (Ed.), **Designing Instruction for Human Factors Training in Aviation**. Aldershot, UK: Avebury Aviation..
- Hunt, G. J. F., (1986). Needs assessment in adult education: tactical and strategic considerations. **Instructional Science**, 15.
- Hunt, G. J. F., (1992, July). The verification of pilot abilities as a basis for validating flight crew competency. **NATO Advanced Study Institute on the Verification and Validation of Complex and Integrated Human-Machine Systems, Vilmeiro, Portugal**. Palmerston North: School of Aviation, Massey University.

- Hunt, G. J. F., and Kinross, N. J., (1988). **The Identification of Competencies in Top Level Health Executives.** Palmerston North: Massey University and the New Zealand Institute of Health Management.
- Hunt, G. J. F., (1997). Instruction and evaluation: design principles in instructional design. In G. J. F. Hunt (Ed.), **Designing Instruction for Human Factors Training in Aviation.** Aldershot, UK: Avebury Aviation..
- Huse, E. F., and Cummings, T. G., (1985). **Organisation Development and Change.** St Paul: West.
- ICAO Circular 247-AN/18, 1994. Human factors, management and organisation. **Human Factors Digest No 10.** Montreal, Canada: ICAO.
- Isaacs, A. R., (1996). Human Cognition and Advanced Technology. In **Human Factors Digest No 13, Proceedings of The Third ICAO Global Flight Safety and Human Factors Symposium (Auckland, April 1996).** Montreal: ICAO.
- ISO 8402: 1986, **Quality Vocabulary.** Wellington: Standards Association of New Zealand.
- Jarillo, C. J., (1988). On strategic networks. **Strategic Management Journal**, 9, p31-41.
- Johnson, L. (1996). From mechanistic to social systemic thinking: a digest of a talk by Russell L. Ackoff. **Innovation in Management Series.** Cambridge, MA: Pegasus Communications, Inc.
- Johnston, N. (1996). Reflections on simulation and training. **Human Factors Digest No 13, Proceedings of the Third ICAO Global Flight Safety and Human Factors Symposium (Auckland, April, 1996).** Montreal: International Civil Aviation Organisation.
- Johnson, W. G., (1980). **MORT, Safety Assurance Systems.** New York: Marcel Dekker.
- Kaufman, R., (1991). Toward total quality. **Training**, December.
- Katzenbach, J. R., (1998). **Teams at the Top: Unleashing the Potential of Both Teams and Individual Leaders.** Boston, Mass: Harvard Business School Press.
- Katzenbach, J. R., and Smith, D. K., (1993). **The Wisdom of Teams.** Boston, Mass: Harvard Business School Press.
- Keegan, R., (1982). **The Evolving Self: Problem and Process in Human Development.** Cambridge, MA: Harvard University Press.

- Keegan, R., and Lahey, L. L., (1984). Adult leadership and adult development: a constructivist view. In B. Kellerman, (ed.), **Leadership: Multidisciplinary Perspectives**. Englewood Cliffs, NJ: Association Press.
- Knowles, M. S., (1980). **The Modern Practice of Adult Education: Andragogy versus Pedagogy**. New York: Association Press.
- Knowles, M. S., (1983). Making things happen by releasing the energy of others. **Journal of Management Development**. Brisbane: University of Queensland Business School.
- Knowles, M. S., (1990). **The Adult Learner: A Neglected Species/4E**. Houston: Gulf Publishing.
- Kosakai, T., (1997). A practical approach to human factors. In **Human Factors Digest No 13, Proceedings of The Third ICAO Global Flight Safety and Human Factors Symposium (Auckland, April 1996)**. Montreal: ICAO.
- Kosslyn, S. M., (1985). Mental imagery ability. In Sternberg, R., J., (1985). **Human Abilities: An Information-Processing Approach**. NY: W. H. Freeman and Company.
- Kotter, J. P., (1996). **Leading Change**. Boston, Mass.: Harvard Business School Press.
- Krivosos, P. D., (1984). Message distortion in organisational settings. In B. L. Hawkins and P. Preston, (eds.), **Readings in Managerial Communication**. Santa Monica: Goodyear Publishing.
- Kuhnert, K. W., and Lewis, P., (1987). Transactional and transformational leadership: a constructivist developmental analysis. **Academy of Management Review**, Vol 12, No 4, 638-657.
- Landy, F. J., and Becker, W. S., (1990). Motivation theory reconsidered. In Cummings, L. L., and Straw, B. M., (eds.), **Work in Organisation**. Greenwich, Connecticut: JAI Press, Inc., 1-38.
- Latham, G. P., and Saari, L. M., (1979). Application of social learning theory to training supervisors through behaviour modelling. **Journal of Applied Psychology**, 64, 329-346.
- Lave, J., and Wenger, H., (1991). **Situated Learning**. Cambridge: Cambridge University Press.
- Lemonick, M. D., (31 Jul 1995). **Glimpses of the Mind: What is Consciousness? Memory? Emotion? Science unravels the best-kept secrets of the human brain**. Time New Zealand Magazine.

- Limerick, D. C., and Cunningham, B., (December, 1990). Quality management: a network organisation philosophy. A paper presented to **ANZAME Conference on Quality Management**, Launceston, Tasmania.
- Limerick, D. C. and Cunningham, B., (1993). **Managing the New Organisation: A Blueprint for Networks and Strategic Alliances**. Chatswood, NSW: Business and Professional Publishing.
- Locke, E. A., (1968). Toward a theory of task motivation and incentives. **Organisational Behaviour and Human Performance**, 3, 157-189.
- Locke, E. A., Feren, D. B., McCaleb, V. M., Shaw, K. N. and Denny, A. T., (1980). The relative effectiveness of four methods of motivating employee performance, in K. D. Duncan, M. M. Gruneberg and D. Wallace, (eds.), **Changes in Working Life**. London: John Wiley.
- Loh, J. M., (1991). General John Loh: The gospel of quality. In **Lockheed**, Vol 3, No 1, June 1991. Calabasas, CA: Lockheed Creative Communications.
- Mahoney, J., (1988). **Management Today**, London: BIM.
- Mancuso, V., (1997). Moving from theory to practice: integrating human factors into an organisation. In **Human Factors Digest No 13, Proceedings of The Third ICAO Global Flight Safety and Human Factors Symposium (Auckland, April 1996)**. Montreal: ICAO.
- Maurino, D. E., Reason, J., Johnston, N., Lee, R. B., (1995). **Beyond Aviation Human Factors: Safety in High Technology Systems**. Aldershot: Avebury Aviation.
- McClelland, D. C., (1961). **The Achieving Society**. Princeton: Van Nostrand.
- McClelland, D. C., (1985). **Human Motivation**. Glenview, Ill: Scott Foresman.
- McClennan, R., Inkson, K., Dakin, S., Dewe, P. and Elkin, G., (1987). **People and Enterprises: Human Behaviour in New Zealand Organisations**. Sydney: Holt, Rinehart and Winston.
- McCormick, E. J., and Sanders, M. S., (1983). **Human Factors in Engineering and Design**. (5Ed.). Singapore: McGraw-Hill, International Student Edition.
- McGregor, K., (1996). Being set up to fail: an overview of predictable human factors problems. In **Human Factors Digest No 13, Proceedings of The Third ICAO Global Flight Safety and Human Factors Symposium (Auckland, April 1996)**. Montreal: ICAO.

- Megargee, E. I., Bogart, P. and Anderson, B. J., (1966). Prediction of leadership in a simulated industrial task. **Journal of Applied Psychology**, 50, 292-295.
- Miller, C.O., (1988). System safety. In Wiener, E.L., and Nagel, D.C., **Human Factors in Aviation**. San Diego, Cal: Academic Press.
- Miner, J. B., (1978). Twenty years of research on role-motivation theory of managerial effectiveness. **Personnel Psychology**. 31, 739-760.
- Miner, J. B., (1984). The validity and usefulness of theories in an emerging organisational science. **Academy of Management Review**, 9, 296-306.
- Misumi, J., (1985). **The Behavioural Science of Leadership: An Inter-disciplinary Japanese Research Program**. Ann Arbor: University of Michigan Press.
- Mitchell, T. R. and Wood, R. E., (1980). Supervisors' responses to subordinates' poor performance: a test of the attributional model. **Organizational Behaviour and Human Performance**, 25, 123-138.
- Montgomery, FM Lord, (1961). **The Path to Leadership**. London: Pan Books, Ltd.
- Naisbitt, J., and Aburdene, P., (1990). **Megatrends 2000**. London: Pan Books, Ltd.
- Newall, A. and Simon, H. A., (1972). **Human Problem Solving**. Englewood Cliffs, NJ: Prentice Hall.
- Pascale, R., (1990). **Managing on the Edge**. New York: Simon & Schuster.
- Peters, T. J., and Waterman, R. H., (1984). **In Search of Excellence**. Sydney: Harper and Row, Publishers.
- Peters, T. J., (1992). **Liberation Management: Necessary Disorganisation for the Nanosecond Nineties**. London: McMillan.
- Pettigrew, A. M., (1973). **The Politics of Organisation Decision Making**. London: Tavistock.
- Pettigrew, A. M., (1976). **The Creation of Organisation Cultures**. Joint EIASM-Dansk Management Centre Research Seminar, Copenhagen.
- Pfeffer, J., (1981). Management as symbolic action: the creation and maintenance of organisational paradigms. In Cummings, L. L. and Staw, B. M., (eds.) **Research in Organisational Behaviour** Vol 3. Greenwich, Connecticut: JAI Press, Inc., 1-52.

- Powell, W. W., (1990). Neither market nor hierarchy: network forms of organisation. In B. M. Staw and L. L. Cummings (Eds.), **Research in Organisational Behaviour**, Vol 12. Greenwich: JAI Press.
- Porac, J. F., (1990). The job satisfaction questionnaire as a cognitive event: first- and second-order processes in affective commentary. In Ferris, G. R. and Rowlands, K. M., (eds.) **Theoretical and Methodological Issues in Human Resource Research**. Greenwich, Connecticut: JAI Press, Inc., 85-136.
- Prigogine, I., and Stengers, I., (1984). **Order out of Chaos: Man's New Dialogue with Nature**. Boulder, CO: New Science Library.
- Rangihau, J., (1975). Being Maori. In King, M., (ed.), **Te ao huringi**. Wellington: Hicks Smith & Sons Ltd.
- Rasmussen, J., (1986). **Information Processing and Human-Machine Interaction**. Amsterdam: North-Holland.
- Raven, B. H., (1965). Social influence and power. In I. D. Steiner and M. Fishbein, Eds., **Current Studies in Social Psychology**. NY: Holt.
- Reason, J. T., (1990). **Human Error**. Cambridge: Cambridge University Press.
- Reason, J. T., (1989a). The contribution of latent human failures to the breakdown of complex systems. **Royal Society Discussion Meeting on Human Factors in High-Risk Situations**. London, June 28-29.
- Reason, J., (1990). **Human Error**. Cambridge: Cambridge University Press.
- Reason, J., (1997). **Managing the Risks of Organisational Accidents**. Aldershot: Avebury Aviation.
- Robbins, S. P., and Barnwell, N. S., (1989). **Organisation Theory in Australia**. Sydney: Prentice Hall.
- Romiszowski, A. J., (1981). **Designing Instructional Systems**. London: Kogan Page.
- Rowe, H., (1997). Critical thinking: the path to empowerment. In K. McKay and J. Heinrich, (Eds.). **Capability: Educating for Life and Work**. Wellington: Education & Training Support Agency.
- Senge, P. M., (1990). **The Fifth Discipline: the Art and Practice of the Learning Organisation**. New York: Doubleday/Century.
- Senge, P. E., (1990). **The Fifth Discipline: The Art and Practice of the Learning Organisation**. New York: Doubleday/Currency.
- Senge, P. M., (1990). The leader's new work: building learning organisation's. MIT Sloan School of Management. **Sloan Management Review**, Fall, 1990.
- Senge, P. M., Kleiner, A., Roberts, C., Ross, R., B., Smith, B. J., (1994). **The Fifth Discipline Fieldbook**. New York: Doubleday.

- Senge, P. M., (1996). Leading learning organisations: the bold, the powerful, and the invisible. In F. Hesselbein, M. Goldsmith and R. Bechard, (Eds.), **The Leader of the Future**. The Drucker Foundation. San Francisco, Cal: Jossey-Bass, Inc.
- Schein, E., (1985). **Organisation Culture and Leadership**. San Francisco: Jossey-Bass.
- Schein, E., (1993). How can organisations learn faster? The challenge of entering the green room. **Sloan Management Review**, Winter, 1993.
- Schön, D. A., (1971). *Beyond the Stable State*. New York: W. W. Norton.
- Simon, H. A. (1990). Invariants of human behavior. **Annual Review of Psychology**, 41, 1-19.
- Sligo, F. X., (1988). **Effective Communication in Business**. Palmerston North: Software Technology (NZ).
- Slim, FM Lord, (1956). **Defeat into Victory**. London: Cassell.
- Tarnas, R., (1990). The transfiguration of the western mind. **ReVISION**, Vol 12, No. 3 pp 3-17. Winter, 1990.
- Tremaine, M., (1990). Sharing from the baskets of knowledge. In F. X. Sligo, (Ed.), **Business Communication: New Zealand Perspectives**. Palmerston North: Software Technology NZ Ltd.
- Trompenaars, F., (1993). **Riding the Waves of Culture**. London: Nicholas Brearley.
- Urwick, L., (1938). **Scientific Principles and Organisation**. New York.
- Vroom, V. H., and Yetton, E. W., (1973). **Leadership and Decision Making**. Pittsburgh: University of Pittsburgh Press.
- Wallas, G., (1926). **The Art of Thought**. NY: Harcourt, Brace.
- Walker, W. G., (1980). Leadership for lifelong education: the role of education administration. In Cropley, A. J., (ed.) **Towards a System of Lifelong Education**. Oxford: Pergamon Press; Hamburg: UNESCO Institute for Education.
- Webster, J., and Starbuck, W. H., (1988). Theory building in industrial and organisational behaviour. In Cooper, C. L., and Robertson, I., (eds.) **International Review of Industrial and Organisational Psychology**. John Wiley.
- Weick, K. E., (1976). Educational organisations as loosely coupled systems. **Administrative Science Quarterly**, 21, 1-19.
- Westrum, R., (1988). Organisational and inter-organisational thought. In Proceedings of the **World Bank Workshop on Safety Control and Risk Management**. Washington, DC., 16-18 October.
- Whitehead, A. N., (1931). 'Introduction'. In Donham, W. B. **Business Adrift**. New York: McGraw-Hill.
- Wickens, C. D., (1984). **Engineering Psychology and Human Performance**. Columbus, Ohio: Bell and Howell Company.

- Wickens, C. D., and Flach, J. M., (1988). Information processing. In E. L. Wiener and D. C. Nagel, **Human Factors in Aviation**. San Diego, Cal: Academic Press.
- Wiener, E. L., (1988). Cockpit automation. In E. L. Wiener and D. C. Nagel, **Human Factors in Aviation**. San Diego, Cal: Academic press.
- Williams, R. E., (1978). Programmed instruction for creativity. In J. Hartley and I. K. Davies (Eds.), **Contributions to an Educational Technology, Vol 2**. London: Kogan Page.
- Wolfe, T., (1979). **The Right Stuff**. New York: Farrar, Straus & Giroux.
- Zaleznik, A., (1990). The leadership gap. **Academy of Management Review**, Vol 4, No 1, 7-22.