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An ethnographic investigation of the relevance of shop floor culture to effective safety communication in an Australian minerals refinery

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ABSTRACT

Many organisations which aim to achieve excellent workplace safety choose ‘culture change’ as the means to achieve this. They make use of employee communication media to help re-form the values, beliefs, norms and behaviours which are generally thought to comprise culture.

However, culture is a complex and profound phenomenon. Successful communication between two culturally separate groups requires each to achieve an understanding of the other, no less so in workplaces than in societies composed of different cultures.

Yet even employers who believe in communicating fully with their workforces find it difficult to convey viewpoints other than their own. Their communication tends therefore to be one-directional, asymmetrical and controlling, typified by the ubiquitous staff newsletter containing articles about people’s contribution to corporate goals. The messages contained in such media have little or none of their desired effect because they tend to be re-interpreted via the cultural forces of the workers to whom the messages are directed.

This study investigated a large industrial minerals refinery to analyse the working lives of shop floor employees and the effectiveness of various communication channels. It focused on one group to whom safety messages were communicated, the shop floor ‘crews’, and examined how the organisation’s hierarchy, rules, and informal organisation mediated this communication.

An ethnographic approach was chosen as the means of the research because of its emic superiority to the frequently-used quantitative methods of inquiry into both organisational culture and safety. Through deep immersion in the working lives of the shop floor, this method provided an epistemological vibrancy which statistical analysis could not. Via the ethnographic method, the study explored whether and to what degree the communication of safety messages can contribute to safety.

From a contextual understanding of how safety communication occurred within the refinery, the study went on specifically to examine a novel approach taken

there, which was to devolve the promotion of safety to a team of workforce communicators at the refinery. The Safety Motivation and Communication team employed ‘the voice of the workers’ with the declared intention of obviating any cultural barriers to communication. However, the study found that the high expectations placed on the team were partly contradicted by circumscribed autonomy, so that the voice became one which neither shop floor nor management recognised as its own.

The study recognised that an organisation’s declared commitment to safety is a necessary condition for eliminating injuries. However, that commitment must be accompanied by both an understanding of the working lives of employees and an acceptance that the employee culture may itself contain the seeds of injury-free work. Attempts to change the culture will be resisted and may even fail – not only because the imposed culture is alien but also because it counteracts the safety potential inherent in the ‘native’ culture of the shop floor.

The people responsible for the formalised communication in a workplace (the newsletters, bulletins, campaigns and incentives) should therefore allow the culture of the workforce to inform the communication, thus achieving a situation in which communication can contribute to corporate goals such as injury-free work.

DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

i. incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education;

ii. contain any material previously published or written by another person except where due reference is made in the text; or

iii. contain any defamatory material.

David R Leith

18 November 2003

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I want to acknowledge and thank the many people who contributed to my research and to this thesis. My principal supervisor, Dr Lelia Green, provided steady but gentle guidance throughout the three years which this project has taken. There was one piece of guidance which I came to value so highly that I now pass it on to anyone who will listen. It was her first piece of advice – keep a research diary. I started my diary (on the computer) the next day and from then on I loaded every relevant thing into the document. I have just checked and it now amounts to 83,630 words, almost as big as this thesis. I cannot imagine how many times I have trawled this pedagogical stockroom for valuable references, personal notes or memos to myself.

Lelia's guidance went well beyond her invaluable advice. Her scholarly erudition in so many fields including communication, culture studies and business allowed us to debate all sorts of important issues as my research progressed. Thank you, Lelia.

My off-campus supervisor, Dr Nic Ormonde, was a source of inspired commentary about Orco throughout the project. I always felt that my analysis and interpretation of the working life of the refinery would have to pass his own unerring insights. The occasions when his professional commitments forced us to meet over lunch stimulated further revealing debate, the result of which was a far better thesis than I could otherwise have produced.

At Edith Cowan University, I received help from so many people. Dr Jan Gray showed continuing interest in my work: thank you, Jan, also for your excellent research course which set me on my journey of enquiry. Prof Mark Balnaves and Dr Mardie O'Sullivan kindly read this entire document and gave me their valuable comments. There were many others in the School of Communications and Multimedia who encouraged and contributed. To the library staff, thank you for your patience with my requests: in particular Lyn Leslie, Sandra Sullivan, Gina Sjepcevich, Maggie Brown and Jeanette Simpson.

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I want particularly to thank the people of the refinery for their preparedness to have me work with them. There are too many to mention by name, except that I do want to mention the people I call ‘my crew’ in this thesis: Bert Entwhistle, Chris Jones, Angus Hay, Harry Slocombe, Darren Redman, Dave Bell, Fred Jamieson, George Christo, Greg White, Luca Rossetti, Norm Mcleod and Peter Cater. Now that I have singled out these people, I know that there might be a couple of operators who will read this list and justifiably say: ‘Bugger me, what about us?’

Well, I promised you I would change your names to conceal your identities. So it’s you I’m talking about. Thank you for your stimulating company, I’ll never wear a raincoat again without remembering your practical jokes.

The other group of pseudonymous contributors are the key informants who guided my explorations of the refinery: Jock Hay, Charlie Rogers, Frank Brown, Merve Hicks and Eion Muffett. (It’s you, too, guys.) Thank you. I hope I have done justice to your wonderful contributions. The noted research authority Michael Agar (1996) maintained that the essence of ethnographic fieldwork is the collaborative relationship between researcher and those being researched. I will always be grateful that the people of the refinery so readily collaborated in this project.

Back to real names, my thanks go finally to my family and personal support ‘crew’: my daughters Belinda and Genevieve, Russell Leith, Bonnie Thomas, Margaret Thomas and Rod Lillywhite and Marian Gosper.

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GLOSSARY OF SPECIAL TERMS USED IN THIS THESIS

Behaviour-based safety (BBS): A safety management approach consisting of employee training in safe and at-risk behaviours, systematic observation and recording of the targeted behaviours, and feedback to workers (Geller, 1999).

Bund: In a factory or refinery, a low dam intended to contain spilled liquid.

Business Centres: The refinery's 11 production and maintenance departments. Some retain the superseded designation of Operating Centre (OC).

Communication group: The refinery's small team of specialist public relations staff who conduct the refinery's employee and community relations activities.

Communication orientation: A term which indicates the group whose interests are represented by the communication, which can range from sender-oriented to receiver-oriented (Cameron & McCollum, 1993).

Crew: A team of production workers headed by a foreman.

Crib: An industrial worker's lunch. A crib room is therefore a workers' gathering room.

Digester: The large pressure cooker where the alumina dissolves out of the bauxite in a slurry of caustic soda in the alumina refining process.

Emergency shower: A combination cold-water shower and wash basin where workers can wash chemicals from their bodies or eyes. Each emergency shower 'station' is identified by a green neon light.

Green liquor: A term widely used in mineral process industries for the process liquid which contains the dissolved mineral. In the alumina processing industry, the green liquor is actually red-brown in colour. See also 'Liquor'.

Hazard: A potential source of harm to life, health or property. (IFAP, 2001). Workers at the refinery tended to be alienated by management not responding to their concerns about the hazards they identified. However, management tended to believe that the workers did not recognise that not all of the hazards presented actual 'risks' (q.v.).

Liquor: The mixture of bauxite and caustic soda which is termed 'green' after it has been in the digesters and 'spent' after it has had the alumina precipitated out.

Main gate: The entrance to the production areas of the refinery, and the place where SMAC displays were placed.

Mono-goggles: Eye protection goggles resembling skiing goggles.

NOHSC: The National Occupational Health and Safety Commission is the Australian federal government's workplace safety and health organisation.

Orco: Trading name of the fictitious Ohio Refining Company which has its head office in Cleveland, Ohio in the USA.

Refinery Manager: The most senior site manager.

Risk: The combination of the potential consequences of a specific unwanted event and the likelihood of its occurrence (IFAP, 2001).

Safety climate: An impermanent manifestation of safety culture (K. Mearns, Whitaker & Flin, 2003). Various researchers claim to have identified between 2 and 28 factors which define climate (Glendon & Litherland, 2001). For example, the six-factor safety climate model used by Glendon & Litherland (2001) consists of perceptions of: communication support, adequacy of procedures, work pressure, personal protection equipment, relationships and safety rules.

Safety Co-ordinator: A member of a production crew temporarily assigned to special duties to assist the Safety Department.

Safe Work Instruction: Also known as Standard Work Instruction, a series of detailed steps that outline how to perform a task so as to manage risks to an acceptable level (IFAP, 2001).

Shop floor: Originally the site where production work occurred, now used to designate the lowest level in a workplace hierarchy.

Slurry: The mixture of crushed bauxite and spent liquor before it passes into the digestors.

SMAC: Acronym of the refinery's Safety Motivation and Communication team.

Southend: The half of the refinery where initial stages of alumina production occurred, consisting of the mills, digestion, and clarification. Southend 1 was the portion of Southend consisting of the mills and digestion (and associated buildings).

Tagging or Tagging out: The procedure for notifying workers by way of swing tags that machinery should not be operated, thus of taking machinery out of service.

3D: The title of Orco's program for maintaining tidy work areas, standing for the three actions which workers should perform to make an area tidy: 'detect, decide, do'.

Toolbox (meeting): Originally an informal get-together of workers who sat on their work toolboxes. A toolbox meeting is now a semi-formal briefing held at the start of a shift.

***Toolbox Topics*:** The briefing notes usually prepared by the refinery Communication Group and Safety Department for discussion at toolbox meetings.

Top management: A term used by refinery people to mean the Refinery Manager and six managers reporting directly to him.

Wait 1: Orco's slogan for the safety practice of stopping and thinking about any task for a minute before beginning.

Zero-injury workforce: An Orco vision in which its workforce would suffer no injuries either at work and away from work. (See also page 77)

REFERENCING AND LANGUAGE

The referencing of material in this thesis is based in the main on the *Publication manual of the American Psychological Association 5th Edition* (2001), known as ‘APA style’.

In order to differentiate between academic authorities and my informants, I have adopted the practice of using double quotation marks for the former and single quotation marks for the latter. (I have also used single quotation marks for short phrases of any source.).

I have used UK-English spelling, except in quotations when I have retained original usages such as the American-English ‘z’ in words like ‘organization’.

This thesis contains a few instances of potentially offensive language.

BIOGRAPHIES

The following are the principal Orco people who appear in this thesis.

My key informants[1] were:

Jock Hay	Jock is a Safety Consultant in the refinery's Safety Department. He was a skilled tradesman in his native New Zealand, and an active union organiser. After migrating to Australia he soon secured a job with Orco as a tradesman. Jock has an earnest interest in safety and put himself through a part-time tertiary course in occupational safety and health. He is aged in his early 30s.
Charlie Rogers	Charlie is an operator in Southend aged in his late 30s. Most recently, he has been exposed to safety management and communication through being seconded to special duties as the Safety Co-ordinator for Southend. In this temporary role, he has enthusiastically attempted to take some big initiatives.
Frank Brown	Frank is a member of the refinery's Training Department in his late 40s who has been promoted from the shop floor. His many years as an operator and process controller have given him a thorough knowledge of the operations of Southend. Frank enjoys involving himself in the 'politics' of Southend.
Merve Hicks	Merve is a technician in the metallurgical laboratory of the refinery. He has had no work experience of the shop floor but his position has given him a wide exposure to most of the activities and people of the refinery. He is an active contributor to the SMAC team. He is aged in his late 40s.
Eion Muffett	Eion is aged in his early 50s and has been an operator and process controller at the refinery for most of his working life. He takes a lively interest in the culture and the management practices of the refinery. While I was at the refinery he was on special duties helping to devise safety initiatives in Southend.

[1] Agar (1996, p. x) commented that the term 'informants' seemed ugly in current use, but decided against changing it just because it was unfashionable. I have therefore retained it, too.

The members of 'my crew' were:

Foremen

Bert Entwhistle	A process controller aged in his late 40s with many years' experience who began training to be a foreman while I was at the refinery.
Chris Jones	The foreman of my crew during most of my time at the refinery, pending the appointment of Bert. He is about 50.

Process Controllers

Angus Hay	A middle-aged Scot with an earnest demeanour who seems to get real pleasure from the technical challenges of his job.
Harry Slocombe	Perhaps the quietest member of the crew who mostly observes and enjoys the conversations and events going on around him. He is in his mid-30s.

Operators

Darren Redman	The youngest operator in his mid-30s and a partner with Fred Jamieson (below) in many of the practical jokes and funny conversations.
Dave Bell	Now in his 60s, the oldest member of the crew who works by himself much of the time and who only rarely combats the teasing of the others.
Fred Jamieson	A Scot in his early 40s who energises the crib room with his ceaseless humour, often intended to embarrass those around him.
George Christo	The Safety and Health Representative for the crew but a quietly rebellious 30-something who seems to suffer from the lack of stimulation in the operator's job.
Greg White	An employee of a labour hire company and therefore something of an outsider in his workmates' eyes despite being with this crew for 18 months – aged about 40.

Process Cleaners

Luca Rossetti	The natural leader of his team of three, and a worker who likes to analyse events and people around him for their political meaning – aged about 45.
Norm McLeod	A very quiet and methodical worker in his early 40s who rarely participates in crib room conversations.
Peter Cater	Also quiet, but often with an amused expression on his face as he observes people and events around him – aged about 40.

Others who appear in the thesis were (in alphabetical order by first names):

Andrew Smith	Health and Safety Supervisor
Ben Clifton	Foreman
Bill Munro	An operator in Southend
Brendan Johnstone	Senior member of the Safety Department
Dennis Lloyd	A Refinery Manager
Eduardo Marcuse	Former Refinery Manager
Franco Amalfi	Senior member of the Safety Department
Frank Brown	Member of the Training Department
Gary Harnett	Southend Manager
Graeme Thompson	Operator in Southend and Safety Rep.
Jean Wingate	Member of the Communication Group
Jeanette Drake	Southend supply officer
Jeremy	Cadet engineer
John Williams	Former Supervisor in Southend
Jon McIntosh	A Refinery Manager
Joseph Ewers	Foreman
Joshua Black	Northend Manager
Kevin Rumer	Operator in Southend
Kyle Isaacs	SMAC member
Malcolm Sutton	Foreman in Southend
Marg Winter	Member of the Communication Group
Mark Dawson	Southend 1 Supervisor
Matt Barnard	An Occupational Health, Safety and Environment Manager
Mike Ferrari	An Occupational Health, Safety and Environment Manager
Rhys Williams	Safety Co-ordinator
Roy Levinson	Safety Consultant
Sam Penny	Member of the Communication Group
Steve Bush	Safety Consultant
Ted Connolly	Training Officer
Tony Kent	SMAC member
Wayne Reid	Operator in Southend

CHAPTER 1:

INTRODUCTION

This is an account and analysis of the working lives of shop floor workers in a large industrial plant, and how the workers assimilated, altered and acted out the safety messages which their employer and peers directed at them. The subject of investigation is therefore communication. The subject of the communication is the safety of 1,500 people in a workplace where the possibility of serious injury is ubiquitous.

While workplace safety has been researched from many perspectives, as has workplace communication, there has been little effort to treat the two as a single focus of investigation. Moreover, there is no evidence of any significant attention to safety communication from the viewpoint of the people who are its audience, the workers of the shop floor. Rather, existing research has been from the viewpoint of management which initiates the communication. In taking the viewpoint of the shop floor workers, this study is intended to break new ground in exploring whether communication might play a role in the production of safer workplaces, and how it might do so.

The method I used to break this new ground, ethnography, was chosen in order to illuminate the shop floor perspective as clearly and truthfully as possible. The ethnographic process of participant-observation, derived from social and cultural anthropology, has become a valuable means of achieving richer understanding of the shop floor and of developing new concepts about work (Hodson, 1998, p. 1,173) since its first manifestation in the famous Hawthorne studies in the 1920s and 1930s (Roethlisberger, Wright & Dickson, 1939). The method began to flourish more recently with the respected research of shop stewards in England by Batstone, Boraston and Frenkel (1977) and the exposition by Willis (1981) of how working class children end up occupying working class jobs. I used ethnography in this study in two stages. In the first instance, I wanted to deeply acquaint myself with the minutiae of a workplace where I had previously been a complete outsider. Only after

achieving such an understanding, could I then feel qualified to propose any hypotheses about safety communication. Raiethel (1996) neatly expressed how ethnography can be used to achieve in this sequence:

> The application of ethnographic methods to work research, then, begins by our viewing each work group or organisation as a culturally alien community whose world-model and practices we must reconstruct from the utterances and situated actions of the working persons (p. 320).

In the course of my ethnographic work, I was to discover a fortuitous further reason why this culturally intense investigation was appropriate in this case. The organisation had begun to view itself in cultural terms. For example, management believed that achieving the company's target of 'zero injuries' would require the development of a 'total safety culture'. In this light, when I once discussed with a member of the top management of the refinery whether my research would provide the organisation with something useful on safety, he said: '[Our workers] are like a tribe. I don't understand them much at all.' This opinion seemed to acknowledge the workplace as a culture and of somewhat alien, tribal subcultures within it, and should have forewarned top management that communicating within this culture might be problematic.

However, ignoring the consequences of culture, management in the organisation did what many organisations do; it directed a great amount of information at the workforce in the hope that this would mould its shop floor culture into the shape management wanted it to be. The abundance of this material was supplemented with a stream of culture change programs which themselves were supported by programs of retraining, team motivation, feedback systems and audits. Behind all this was the safety philosophy of the refinery's management: to teach workers how to be safe, to lead by example and to enforce rules. This all appeared to work. Coinciding with this cultural approach to safety there was an actual reduction in the number and frequency of incidents and injuries at the refinery, which confirmed the company's belief that the cultural approach was the key to safety success and which reinforced its resolve to pursue a 'total safety culture'.

For all these reasons, it was a good time for me to dig deeply into communication and 'culture' at the refinery.

As foreshadowed above, there is a large body of literature about culture and 'informal organisation' in workplaces. Some of the literature deals with matters of productivity, exploring the processes by which work groups mediate the principles and instructions of management to create a working routine of their own (Engestrom & Middleton, 1996; Whitney, 1989). There is a second large body of management theory and organisational psychology which attempts to quantify the interpersonal and group forces operating in workplaces, with the ultimate aim of revealing secrets of the cultural development of these workplaces, including safety (Geller, 1999). Thirdly, there is a body of cultural studies of communication within and between work groups, essentially micro-analyses of networks and interactions, to determine how these groups solve problems and achieve goals, such as directing underground train networks (C. Heath & Luff, 1996) or aircraft in airspace (Goodwin & Goodwin, 1996; C. Heath, Knoblauch & Luff, 2000, p. 14). In the related field of industrial anthropology, some safety research has examined workplaces as societies rather than cultures. One such researcher, Dwyer (1991), saw accidents as 'socially produced errors'. He argued that the reward systems, command systems and organisational features of workplaces are the antecedents of accidents. (Piece-work is an acknowledged antecedent of accidents because it encourages workers to take higher risks to achieve higher pay.)

My work drew somewhat from each of these approaches but also stood apart from them all. I was not directly concerned to learn how the informal organisation of the shop floor was created – I was prepared just to describe it as I found it. The informal organisation interested me only to the degree that it represented an alternative set of safety attitudes and behaviours from those of the formal organisation and because it affected the safety communication which sustained the formal organisation. I was not directly concerned with interpersonal communication and its role in safety. My intention was to investigate the role of shop floor culture in formulating the workers' response to the company's expressed desire that they remain safe which was communicated through *formalised* channels. My study concerned itself with how safety messages which were transmitted from the very top of the organisation were interpreted and actioned at the very bottom, and to answer several consequential issues: how the messages were interpreted and actioned when the sender culture was very different (or so I surmised) from the receiver culture

(Arens, 2002, p. 13); whether there was a benefit in the receiver culture being well understood by those who transmitted the safety messages so that the communication could respond to the values and beliefs of the receiver culture rather than organisational dogma (Cameron & McCollum, 1993, p. 218); if there was a benefit in the communication occurring equitably in both directions – from top management to shop floor and from shop floor to top management, creating a dialogue about safety instead of a monologue (Botan, 1997, p. 190).

* * *

This study was located at a large alumina refinery in Australia operated by the Australian subsidiary of Orco.[2] The name Orco was a derivation of Ohio Refining Company and the company's international headquarters were located at Cleveland, Ohio in the USA where it had been founded in the early 1900s. This Orco refinery was established almost 40 years ago and was considered old technology. It did not have the advantages of the company's newer plants in Australia, including better design, spaciousness and nicer surroundings. Over the years its capacity had been expanded with the addition of extra production 'trains' so that it now lay cramped in a site which was too small, between a major highway and a bay.

The refinery made about two million tonnes a year of white alumina powder from crushed bauxite rock. The alumina was shipped to smelters in Australia and overseas for further processing into the metal aluminium. Orco had refineries all around the world, but Australia was its most productive country. In fact, Australia produced more than a quarter of all the world's alumina. That did not mean, however, that the refinery was particularly profitable in relation to the other Orco refineries in Australia. The company frequently reminded the people who worked there that they must improve their efficiency in order to remain competitive with other refineries run by the company and its competitors around the world. The company made it clear that there was no place for a refinery which fell behind in efficiency terms. The refinery also had the worst safety record of any of Orco's plants in Australia, even though this record was very good in comparison with other similar plants run by other companies.

[2] I have changed the name of the company and of the people in this thesis to preserve the confidentiality of their contributions. I have also made other changes to details of places and people for this purpose.

Almost 1,500 people worked at the refinery, two-thirds of them company employees and the remainder employees of contractors. Perhaps because this was an old refinery, the demographics of the workforce seem old-fashioned to a visitor. At June 2002, only 36 of the 956 Orco employees were women. Forty-five per cent were aged 45 or more and almost half of the total had been with the company for at least 15 years. Less than a quarter were classified as 'staff', meaning that the rest were 'wages' people engaged in production jobs and employed under agreements negotiated with trade unions. The wages people were unskilled process operators and skilled trades people. The employee demographics of the many contractors' employees were similar to those for Orco employees, so there is no escaping the fact that the refinery was very much a male, middle-aged, manual-working place. It was also forbidding for a newcomer.

The production of alumina is a hot, dirty and dangerous process invented in Germany a century ago. At its heart is the circular flow of a highly alkaline 'liquor' of caustic soda. Into this flow is introduced the bauxite rock which contains the aluminium metal. As the liquor is heated, pressurised, cooled and de-pressurised the metal is dissolved and then precipitated as alumina. As with all processing of minerals, the principles are simple, but the performance of them in large quantities is difficult. The materials of the production cycle are highly corrosive and highly abrasive. At the Orco refinery, machinery, pipework and vessels are constantly breaking down and wearing out. It seemed to me that the task of the people who work there is not so much to maximise through-put as to prevent complete stoppage. The strain on everyone from the threat of impending trouble is clearly discernible. At the entrance to the refinery is a large display board which indicates the performance for production, costs, maintenance, safety and the environment.

The refinery is legally part of the mining industry and is regulated by the State Government's mining regulatory authority. The most recent government review of mining industry safety legislation fairly described the work situations of this industry generally as:

> often dusty, noisy and sometimes dirty places to work. The operations are also run in a structured and disciplined manner determined by the process speed. The work can also be highly repetitive, sometimes physically demanding but not always mentally or intellectually challenging, although on some sites the process requirements might

> well require interpretive and considerable mental skills….Career advancement is often limited (Laing, 2003, p. 16).

This is a fair description of the shop floor work situation at the refinery.

By chance, my work at the refinery coincided with a major crisis for the company's refineries in Australia, including this one. The media began to carry increasingly accusatory stories about the health effects of contaminants from the refineries upon workers and members of nearby communities. Individual company employees and community people made serious allegations about the contamination, major illnesses and the company's lack of response to their concerns. This kind of attack was new to the company, which had striven to build the highest reputation for corporate citizenship and environmental care for as long as it had operated in Australia. Orco felt it had lost control of the public debate and its own research showed that its external reputation suffered greatly. The company did not know how its workers would react to these allegations but undertook a series of detailed mass briefings to inform them of its side of the debate.

In this setting, my research at the refinery comprised the collection of data in four forms:

1. the ethnographic data contained in my field notes which I transferred to a research diary,
2. taped interviews and group discussions with members of the workforce at the refinery which I transcribed verbatim,
3. examples of formalised communication of the refinery (such as staff newsletters), photographs and notes about exhibitions and displays, selected e-mails and other related electronic data, and
4. organisational and statistical data about the refinery.

In the early months of my research at the refinery, I talked to a group of people at length about their jobs, their workplaces and their working lives. These informants consisted of shop floor people, their supervisors and managers, senior management of the refinery, members of contracting companies, safety professionals and members of the Communication Group. I also walked around the refinery, sometimes guided by these people, sometimes alone, to observe and learn as much as

I could. During this time, I sought to compare what I found from these discussion and observations with what other researchers had written about other workplaces.

The key group of people I focused on as my research progressed were the crews of production operators who worked shifts keeping the refinery operating round the clock. Each crew was managed by a foreman and consisted of 12 people who worked from its crew crib room, a lounge-cum-meeting room. Supporting the crews were secondary functions such as maintenance, laboratory, administration and engineering. The refinery used the services of contracting companies which supplied specialist functions for maintenance and construction and also some members of the crews on a labour-hire basis. On site, it was generally difficult to distinguish Orco employees from contractor employees because they all did much the same work. The contracting companies operated from a separate compound in one corner of the refinery, and their personnel numbered about one-third of the entire workforce of the refinery.

The refinery production crews worked a 12-hour shift system, which meant they worked during a period of 4½ days before having almost 6 days off – which averaged out at 36 hours a week. This staffing system required there to be five crews to have one crew on duty at any time, and these crews were called ‘Shift A’, ‘Shift B’, etc. Despite minor historical differences between each of the five shift crews in any part of the refinery, they were essentially indistinguishable in composition. As I shall described later, however, they were often quite different in behaviour and attitude.

The company had a comprehensive set of formalised[3] communication channels which it used for promoting safety among the workforce of the refinery. The prime medium was the refinery newsletter produced every two months. There was an employee video news program produced every six months, an award scheme which recognised safety initiatives and information sheets made available for discussion at crew meetings. For a number of years, the refinery had had a Safety Motivation and Communication (SMAC) team comprising mostly shop floor workers which conducted safety campaigns.

[3] I use D’Aprix’s (1982) term ‘formalised’ rather than ‘formal’ in this thesis to indicate that the communication was formally produced rather than formal in style or content.

* * *

The respected anthropologist Edward Sapir (1884-1939) once observed that every act of social behaviour involves communication in either an explicit or implicit sense; and that communication is fundamentally symbolic in nature and therefore a reflection of the relationships and understandings that exist between individuals. I argue that Sapir's definition of communication should encompass formalised communication. At the refinery, several themes emerged which clarified these relationships and understandings. The most expected piece of clarification was that safety was not communicated only through formalised means: it was also actively communicated through the informal organisation of the shop floor. Incidents which occurred 'sent a message about safety', to use the crews' own words, which might be opposed to management's formalised messages.

A second clarification was that, just as in other workplaces which have been the subject of ethnographic research, such as Harris (1987) in the UK and Williams (1981) in Australia, the authority in the refinery was partly reversed. An ethos of perpetual change within the company had created rapid turnover of people at supervisory and management levels, while there was very little turnover among the shift crews. In my 18 months at the refinery, there were three Refinery Managers. One particular supervisor (one level above foreman) confirmed he was the fourth person in his position in four years.[4] Yet shop floor members tended to stay put for long periods of time. These people had the corporate memory, they managed the abiding 'knowledge' of the organisation and they also had the staying-power to resist changes introduced by their quickly disappearing managers. This phenomenon produced the impression that, for some purposes, it was the crews who had the long-term perspective and played a role in managing the refinery. What was to emerge was the degree to which top management failed to recognise the contribution of this cadre to safety culture and to safety itself.

[4] Indeed, this particular person was promoted from this position soon after I finished my research at the refinery. The constant turnover in the supervisory and management levels was due to promotion of people, mostly to new positions at other Orco sites in Australia and overseas. For example, one Refinery Manager was promoted to a position in the company head office in Cleveland and then to a position in Europe and finally to a new position back in Australia during the course the three years of my research project. I did not encounter an occurrence of someone leaving the company other than through retirement.

Nonetheless, shop floor life at the refinery was changing. Having adopted the principles of quality management, Orco had set out to measure what its culture actually was, with a view to developing ways to improve it. During my time there, a 'culture survey' was undertaken among company employees across Australia. The purpose was to provide an insight into how the culture could be understood and improved for the greater effectiveness of the company.[5] There was no consensus among top management about quite what 'culture' meant, but managing it was considered to be important.(p. 251)

While I was at the refinery, the first major job reorganisation in a decade was being planned. The shop floor was taking on features of the self-directed, team-based approach which has latterly been popular in the management literature. One of the intended effects of this change was to narrow the instructional gap between shop floor and management because the workers were meant to contribute to the organising of their own work, rather than working to instructions. What the company had failed to recognise was that the shop floor already contributed a good deal of its own resourcefulness in finding solutions to local problems which arose, as Harris (1987) found in a similar plant. Inevitably, there was a struggle over who would dominate this new team-based approach. Workplace ethnographer Hodson (1999) described how workers respond to these kinds of changes:

> Team approaches and the contemporary stress on organizational culture are understood as management's attempt to organize work so that workers monitor each other – a system of micromanagement that in some cases appears to be more effective and intense than even the most coercive systems of direct supervision (p. 294).

Hodson believed that the struggle is not over who controls the workplace in the abstract, but rather to achieve particular objectives. "Struggles in the workplace are more often over specific norms and standards defining the nature of work and the employment relation" (p. 294).

I observed that the struggle on the refinery shop floor was for workers to preserve their authority over the conduct of their own tasks while ostensibly remaining loyal employees. In the context of safety, the workers wished to preserve

[5] Despite my asking over a period of 18 months, I was unable to obtain any report from this survey, my requests being referred fruitlessly from one part of the organisation to another. In fact, top management at the refinery indicated they did not pay much, if any, attention to it.

the right to make their own decisions about what was safe and unsafe (or at least for management to respect their opinions) but at the same time to demand that their employer provide them a safe environment to work in. Workers actively defended existing work practices against the efforts of management to replace them with 'safer' ones. In some cases, management gave up the battle in anticipation of its efforts being ultimately defeated. Crews made their own breakthroughs in safety, attributing these achievements to their ability to take charge, while reluctantly acknowledging that the company did care for them.

All the time, the company was intent on bringing the shop floor safety culture into alignment with its own management culture, even though there is little research evidence that a 'good' or 'positive' safety culture produces safety. In the most recent Australian research, Glendon and Litherland (2001) reported that, contrary to their expectations, they could find no relationship between safety culture[6] and safe behaviour. The problem caused when managers and safety professionals pay so much attention to culture is that they are confusing cultural matters with social or behavioural matters. For example, when they talk about improved safety cultures, they often simply mean systems in which people conduct certain work activities (such as making observations or filling in report forms) rather than conduct themselves in particular culturally-driven ways. Management is familiar with organisational processes such as these, and culture thus becomes captive to managerial principles. Everett (1990) warned against a reliance on viewing organisations as equivalent to cultures because it was conceptually inadequate. He argued: "The conceptual inadequacy stems from the failure to distinguish between cultural and behavioural features of organizational life" (p. 238).

* * *

This was the setting in which I embarked on my investigation of safety communication at the Orco refinery, focusing on the way in which workers responded to messages about safety. In the chapters which follow, I pursue answers to the questions I have outlined. In Chapter 2, I explain the method I used for this

[6] Glendon and Litherland (2001), used the term 'climate'. They operationalised climate as *perceptions* of construction workers according to a variety of factors relating to the management of safety. Most commercial 'safety culture' surveys also use very similar sets of perception factors. For the immediate purposes, the two terms have been rendered interchangeable (see Glossary of Special Terms Used in this Thesis).

study. In Chapter 3, I describe the refinery, its people and its function. In Chapter 4, I analyse why the communication and enforcement of organisational rules played a crucial role in several ways, including the effort to establish a zero-injury workplace culture and climate, giving all workers clarity of purpose which enabled them efficiently to perform their tasks, and keeping them safe from harm. However, I analyse why communication and organisational rules also became vulnerable to a set of unofficial rules.

In Chapter 5, I illustrate how the messages about safety which reached the shop floor were both amplified and distorted by the culture through which they passed. A number of important features of culture emerged from this discussion; among them the ambiguity, fluidity, diversity and intensity of workplace culture.

In Chapter 6, I discuss how management's messages about safety were also affected by the hierarchical nature of their dissemination.

In Chapter 7, I show what happened when top management of the refinery partially relaxed its control of the process of safety communication (both the content and style) by setting up the Safety Motivation and Communication team (SMAC). SMAC was able to communicate in ways which management could not and imparted messages which management would not.

CHAPTER 2:

METHODOLOGY

This thesis is a story about the people of the refinery, and how particular features of their working life influenced the process of safety communication. It is presented in the form of an ethnographic investigation (Barker, 1999) which Agar (1986) translates as a 'folk description'. In this chapter, I explain how the document got to be so.

There were three formative steps at the start of my research which established the central, but essentially, preliminary features. The first was to resolve the objective of the research. The next step was to select a group of people with whom to conduct the research. The third step was to find the best way to achieve my research objective.

Steps one and two did not require much work on my part. My university and Orco, the company which owned the alumina refinery, had arranged to collaboratively support and fund the research. Their aim was to achieve a better understanding of the communication of workplace safety – the process and its effect. The research was to be conducted at the refinery. The latter decision had the advantage of certainty but it also had the potential to limit my work to a non-representative workplace, or worse, to a non-cooperative one. I had worked with companies over many years as a consultant, enough to learn that each organisation has a distinct personality, and some are very wary of outsiders conducting investigations. Fortunately, Orco's support for the research reflected a commitment to openness and self-inquiry which carried through to almost all of the people I encountered. This left the third formative step up to me: choosing the best research method. This process was guided by the research focus and research objective.[7]

My research focus was the construction of safety culture in the shop floor through the communication of safety messages. My research objective was to answer

[7] The research 'focus' is the workplace activity or location which I intended to investigate (Agar, 1996, p. 184), while the research objective is the summation of my research questions.

the following question: How do the shop floor workers at the refinery respond to safety communication, and do they respond best to worker-initiated safety communication? This question is composed of the following questions:

- How do workers establish their own understanding of safety (which is not necessarily that of management)?
- How do workers safely conduct their work duties, and make their interpretations of their roles and their safety obligations?
- How do workers respond to formalised communication, to their own informal communication, and to the relationship between the two?
- Is workers' safety culture different from the company's?

I made an early judgment that answering these questions would best be achieved by a process in which theory would emerge during my research, rather than through the experimental means of the scientific method in which the variables must be specified and controlled, or varied, in advance (Raeithel, 1996). I had a 'hunch' that the shop floor working life of the refinery was so alien to me that an emergent inductive method which would produce qualitative data was preferable to a 'theory-before-data' deductive method (Kusterer, 1978) which would produce quantitative data). To some degree, I was forced into this judgment because there was very little previous research into safety communication in industry upon which I could draw. Moreover, I suspected that the human factors relating to safety communication were likely to be too complex to allow a meaningful and manageable rendition in quantifiable form. If I followed my hunch and achieved a valuable understanding of working life, I would be avoiding several problems of the deductive approach. One problem was the challenge facing any deductive researcher: that the information gathered in response to any quantitative enquiry is a reflection (creation) of the questions which are asked. Questionnaires bring into existence their own answers. Raeithel (1996) stated the issue thus:

> This is particularly pertinent to the psychologist's standard repertoire of methods, in which it is customary to define and measure variables without having to show that these represent the essential elements of some, let alone alien, culture. Ethnographers, on the other hand, try as far as possible to put aside their own familiar perspectives in order to gain an awareness of that which is alien to them (p. 320).

The second problem was the difficulty of describing working life accurately from a moment-in-time snapshot of a set of selected variables. If such reductionism could bring solution-by-questionnaire, would not large organisations like Orco have already done it?[8] Instead, Juravich (1985) enunciated my hunch perfectly: "I would argue that the 'reality' of industrial life lies in its everyday, mundane detail" (p.20).

A third reason for following an emergent approach was that I considered myself to be an inductive thinker rather than an deductive one. I was daunted by the prospect of pre-determining a set of independent variables among the huge variety of human and other factors, pursuant to the scientific method. Better-resourced researchers than myself had got themselves lost in the forest of factors and came to confess the fact (Powell, 1971); and the following frank account by shop floor researcher Kusterer (1978) rang a warning bell for me. Kusterer had embarked on an investigation which he called 'theory-before-data'. His problem was that he had built his theory on the concept of a work community, and his collection of early trial data warned him that such a concept did not exist in reality.

> By the end of the Cone Department study, the gap between theory and data indicated that something was clearly wrong with the plan of the research. The problem was not that the data contradicted the theory – in small areas it did, but mostly it did not. The problem was that most of the concepts and categories in the theory had found no applicability in the analysis of the case study, and many of the most clear-cut concepts that had emerged from the case study were not especially anticipated by the theory (p. 9).

In my circumstances, my earlier career as a journalist had taught me the value of approaching situations with the open mind demanded by the inductive research paradigm which, as Janesick (2000) said, is far from being an empty mind. The open mind approach requires the formation of a line of inquiry which remains constantly prepared to take new directions and make new theory according to what is discovered along the way.

Finally, as I suggested above, I felt that the answer to my research questions was to be found deep inside the refinery, in the daily working lives of its shop floor people. I was accustomed to allowing the part to tell the whole, or the part to provide

[8] A Refinery Manager confirmed to me that, despite various attempts to survey the attitudes, perceptions and beliefs of its employees regarding issues such as safety, Orco was still seeking to learn the 'science' of communicating safety.

insights into the whole, so by profoundly understanding one group of workers I felt that I might find some valuable truths, not just about them but also about other workers in other industrial settings. Further, I was aware that any two people could research the same situation and find different answers – because the variation in the human situation is matched by the variation in the telling of its story. As Clifford's (1986, p. 6) Indian chief said when asked to take the oath in court before giving evidence about his tribe: 'I'm not sure I can tell the truth….I can only tell what I know'. I was confident in my ability to tell what I learned about these workers that would be, if not the truth, then an account of themselves which they would recognise.

I found support and comfort for my proposed approached in many academic researchers of organisations; indeed, these researchers helped lead me to my decision. Hirschhorn (1988) argued for the benefits of the qualitative method when studying workplaces:

> Each has its limits and strengths, but scholars and methodologists increasingly agree that quantitative surveys, formal interviews, and research organized by well-defined *a priori* hypotheses make it difficult for the researcher to understand the meanings that workers attribute to particular events, the feelings they harbor about their work world, and the intentions that shape their relationships to co-workers, bosses, and their own ambitions.
>
> Fieldwork, by contrast, can provide more detailed data on people's motives and feelings (p. 244).

I concluded that the qualitative approach which seemed to best fit all the above requirements of my research was ethnographic. And my conclusion was soon confirmed when I came upon this uncomplicated description of what my work would entail:

> Ethnographers set out to show how social action in one world makes sense from the point of view of another. Such work requires an intensive personal involvement, an abandonment of traditional scientific control, an improvisational style to meet situations not of the researcher's making, and an ability to learn from a long series of mistakes. The language of the received view of science just doesn't fit the details of the research process very well if you are doing ethnography (Agar, 1986, p. 12).

That being said, my experience of visiting other people's workplaces, particularly shop floors, told me that the fieldwork approach does not guarantee a straightforwardly valid and reliable research outcome. For a start, my social and educational background was not that of most shop floor workers. As Juravich (1985) said: "The world of the shop floor workers is so different from the middle-class professional world that it is difficult to understand without first-hand experience" (p. 20).

Poole (1985) emphasised the researcher's involvement in the working life of the shop floor when he discussed research of safety climates:

> If climates have an impact because they shape the meaning of the organisation for its members, and if the structuring of climates themselves depends on meaningful systems of action, then researchers are omitting the crux of the construct when they view climate only from their own remote perspective (p. 105).

He argued that the research must be grounded in the experiences of the people being studied. Even the act of generating a research questionnaire requires deep involvement with the members of an organisation so that the data collected will accurately reflect their experiences. Edgren (1990) emphasised, and warned of, the implications of personal involvement of the researcher studying an organisation's culture: "We ourselves are the instruments when we step inside an organization to gather and interpret cultural data" (p. 173).

I was also persuaded of the value of the ethnographic approach because so much that has been written about the management and communication of safety in organisations is from a management perspective and not a workers' perspective. In short, safety is 'a management problem'. As Kletz (2001) said, our Western culture demands that managers look for principles behind events such as accidents, for the rules of human behaviour, and the behaviour of machinery. He argued that story-telling has a greater value:

> In fact, we learn more from stories, true or fictional, than from statements of principle and exhortations to follow them. Stories describe models which we can follow in our own lives and can help us understand what motivates people (p. 10).

> In safety, the story is not mere packaging, a wrapping to make the principles palatable. The story is the important bit, what really happened (p. 11).

Writers such as Raeithel (1996) emphasise that it is situative factors which strongly determine the socialisation of workers into groups – such as the refinery's shop floor crews – both to solve their task problems and to build the cultural structures we know as teams (p. 328). I was convinced that the way to discover the factors which determine safety on the shop floor was to experience as closely as possible the situations in which the rules of this culture were born.

To summarise, I believed that my research should be conducted in the environment in which shop floor communication and safety were experienced, rather than in the laboratory-like environment of quantitative examination – *in situ* rather than *in vitro*.

However, I was conscious of what I judged to be deficiencies in some forms of workplace ethnography – that the researchers provide a deep and detailed analysis of a single workgroup but fail to answer important questions which the workers themselves ask about the reality of their situation. For instance, Juravich (1985) gave a lively account of the working lives of people in a factory which made electronic cabling, with the aim of demonstrating how such a disorganised 'organisation' typified the post-industrial performance of the United States in competition with the new economies of Japan and East Asia. However, he left the reader as confused as the workers about why things were so disorganised on the shop floor, because to explain the disorganisation would have required him to investigate the factory management. I agreed with Hirschhorn's (1988) critique: "The managers of the company are shadowy if not invisible actors throughout Juravich's study, even though they undoubtedly had a great impact on the shop floor itself" (p. 247). Striking because of similar problems was Grenier's (1988) account of his time at a Johnson & Johnson plant in New Mexico as an unpaid research assistant to the plant's social psychologist. He soon concluded that the 'quality of working life' teams set up by the company were being used by management to eliminate unions from the worker-company relationship, and to manipulate workers through 'soft' controls. From this conclusion, Grenier became a committed activist on behalf of the workers. My research concerned the shop floor at the Orco refinery, but from the

start I felt I needed to explore the shop floor's interaction with the management of the refinery and to avoid taking sides with either the workers or managers.

I felt that a subtler threat to good research practice might be an ethnocentrism, my interpretation of the work lives of the people of the refinery according to the rules of my cultural experience (Hofstede, 1980, p. 31). I hope I was able to defeat this tendency through continual self-awareness and self-criticism. (More about that shortly.) It was more difficult to defeat a related threat, that of playing cultural favourites among the groups I observed. I generally experienced greater feelings of friendship towards the members of the shop floor than the managers, perhaps because the shop floor workers tended to be less inhibited and more able to express their personalities. On the other hand, I detected initial feelings of distrust towards me by the shop floor workers when I explained the purposes of my work. Many of these workers particularly commented on Orco's official support and asked if this amounted to management allegiance. Sackmann (1991) warned that an 'overcurious' researcher with privileges and blessings from the company may create suspicion among the people being studied (p. 303). As things turned out, I did spend considerable time talking to managers about my work, partly because they were more insistent than the workers for me to tell them what I had discovered. This put me under scrutiny by both groups about what I was telling whom about the other and where my loyalties lay. I remained vague about my findings for as long as possible. As best I could, I turned people's questions into topics for them to make their own comments on. However, I do not believe I eradicated people's suspicion of me; and when one worker asked to read a copy of this thesis I formed the impression that the request was motivated as much by personal concern about what I was saying as personal interest.

Grenier (1988) also illustrated another potential trap; that ethnographic approaches can be too focused on the researcher's self, so that the people and lives being observed become the 'subject' of the research in the exploitative sense of the word. Gans (1999) characterised such research as "small studies of exotic sites such as dance halls and strip joints, for which the fieldwork is sometimes mainly an excuse for the researcher to ruminate on how the site felt to him or her" (p. 542).

Thus, these were the threats which I was conscious of needing to combat in order to produce good research. At the same time, there was a kind of second

dimension of threat, because I was aware that the culture on the shop floor was neither static nor locally produced. On the contrary, its formation was a process in which the workers sought to make meaning not only of their own situation but of their supervisors, managers, their multinational employer, the community and the environment in which the plant operated (C. Mills, 2002). Indeed, it was the fluidity and complexity of the situation in which they found themselves which caused their meaning-making to be so difficult for them. Therefore, as I was seeking to make meaning of the work lives of the workers, they were attempting to make meaning of them too.

That is not to say that an ethnographer should seek meaning in every nook and cranny of the organisation. As Marcus (1986) said, there are practical limits to one's research. What is best, he argued, is to focus intensely upon a closely observed locale as the ethnographic subject, while placing the larger order in the background "without losing sight of the fact that it is integrally constitutive of cultural life within the bounded subject matter" (p. 172). The larger order he referred to can be as large as the political economy or the world social order. Even within the closely observed locale, certain matters must fade into the middle distance as the researcher develops "certain perspectives by engaging in some activities and relationships rather than others" (Emerson, Shaw & Fretz, 1995, p. 3). Emerson, Shaw and Fretz even conceded that the researcher will validly follow certain political fault lines in the setting, thereby exposing him or her to selected points of view. An extended period of time I spent with a particular crew in Southend 1 at the refinery happened to coincide with the development of a new fault line within this small group of people. One of their members was nominated to become their foreman, which changed his relationship with them. In retrospect, I am aware of selecting the point of view of his workmates to some degree in my reaction to this potentially destabilising event. There was a balance to be achieved between the narrow view (with its likely partisanship with certain workers) and a wide view (with the likelihood of seeing the forest but not the trees which constitute it). Perhaps the most telling example of the latter is mentioned earlier, Powell's (1971) attempt to use the shop floor observational technique to isolate all the possible factors (engineering, behavioural and environmental) associated with accidents. (The magnitude of this project was captured in the book's title and subtitle *2000 Accidents: A shop floor study of their*

causes based on 42 months' continuous observation.) Powell acknowledged that measuring every possible circumstance of every accident (even the temperature and humidity at the time!) produced not a pattern of causation but a plethora of 2000 individual causations. This reminded me that the purpose of the minutiae is to inform the big picture.

* * *

My review of the literature of organisational studies and ethnography provided me with a theoretical preparation for studying the communication of safety at the refinery. What did it tell me about how I was actually to do the study? As the life of the shop floor is composed of the fluid situations and experiences of its members, I allowed myself to be influenced by workplace researchers such as Kunda (1992) and Barker (1999) who immersed themselves in the fluidity of 'their' workplaces. In the Australian context, Kriegler (1980) took a similar approach although he also conducted no fewer than 26 long and itemised interviews with workers, whereas my interviews were unstructured. (I felt a special affinity for Kriegler because both he and I had the authenticating experience of suffering an injury while engaged in our fieldwork!) Following their examples would mean initially circling widely for starting clues about the shop floor situations and experiences, talking to people in all parts of the refinery, reading company documents, absorbing previous research information and attending meetings both formal and informal.

There was no escaping the feeling that I was a stranger in the refinery. The setting was unfamiliar, although shop floor workplaces were not unknown to me by any means, and I allowed my previous experiences of shop floor life to inform my initial meanderings (Edgren, 1990, p. 174). I had visited industrial workplaces for ten years, gathering information about safety. I had also worked for five years in a railway organisation, albeit as a member of management. For two years, I had made ocean voyages on oil tankers gathering information for articles about the crews.

At first I was curious to see whether these experiences would prepare me for the Orco refinery, and was conscious of not letting them taint my investigation. Allen (2000) canvassed the issues of a researcher's familiarity with a work setting where he or she is conducting ethnographic research. She had been a clinical nurse researching a general hospital. She identified the advantages of familiarity with a research setting

in three forms: a facility with its special language, acceptance by workers as an insider and acceptance by gatekeepers as someone who would act appropriately. The disadvantage, she perceived, was the difficulty of recognising cultural patterns not conforming with her previous experience. I anticipated another effect of my previous experience of industrial workplaces: that I would experience a form of culture shock as I tried to accustom myself to the unfamiliar surroundings and the people.

Agar (1980) reminded ethnographers to ask themselves what personal and cultural influences they bring to their studies. At the same time, he confessed that there is no single method of handling such biases except to be constantly aware of them. He rejected any suggestion that ethnographers should avoid supplying any meanings of their own and leave the sense-making to readers. Agar encouraged researchers to press on: "Ethnography is not merely 'data collection'; it is rich in implicit theories of culture, society, and the individual" (p. 75).

I was therefore more of an outsider than an insider at Orco and needed to remain aware of my personal biases, strengths and weaknesses as a researcher while 'pressing on'. My familiarity with such places warned me how easy it could be to commit *faux pas* by using the wrong words and expressions, and to face alienation through not understanding the setting and being quite unaware of my ignorance. I hoped my vigilance would keep me alert to the workers' communication and my perceptions would be uncoloured by over-familiarity.

In aiming to analyse the safety communication at the refinery through my observation of a small group of shop floor workers, I needed to be sure of satisfying two central prerequisites. How plausible and/or credible would be the evidential claims which I would make from my observations and how convincing would be any 'grand claim' which I might extract from my evidentiary claims (Hammersley, 1990)? After all, it would be one thing to observe things happening and quite another to interpret them. In addressing the validity of making claims from either my own observations or from the words of informants, I would run into three areas of potential problems: my own reactivity (the effects which I and my research created on people and events around me); secondly, the inherent reliability or unreliability of features I observed or comments people made and from which I would draw inferences; and thirdly, the circumstances in which the observing or interviewing would take place and the reporting would occur (Hammersley, 1990).

The product of my presence at the Orco refinery was to be an ethnographic account of my observations, analysis and interpretations. Constructing such an account requires a questionable balance of two separate acts, personal narrative and objective description (Pratt, 1986, p. 33). I describe the balance as 'questionable' because there are as yet no rules of *academe* for judging if the balance is right, or even if the resulting product is good or bad. What relationship should the researcher establish with the members of the culture? How should the information be gathered? How long should the researcher spend in place? How soon should the theory be allowed to emerge from the data? These are all central questions to which there are no precise answers, other than 'whatever is right'. Each ethnographic account must come with its own self-justification, so that its validity and reliability can be determined according to the rules laid down by its internal validation. As the pioneer sociologist C. Wright Mills (1959) said: "Let every man be his own methodologist; let every man be his own theorist" (p. 224).[9] Compared with the scientific method, the focus of authenticity is on the researcher rather than on the method.

If, in the ethnographic research paradigm, the method is reliant on the researcher, I did not propose simply to use any native ability I possessed to immerse myself in the life of the refinery and interpret its culture. Such an exercise would produce a text and a readable one, but not one from which I could reliably answer my research questions about safety communication. If the rules were to be inextricably associated with 'me', I accepted that I must borrow them from others and perfect them for my own circumstances, rather than make them up as a I went along: adopt and adapt, not invent from my own capacities. As Wolcott (1994) said:

> Our capacity for inference is a wonderfully human quality. It enables us to figure things out, to make sense in the world of partial and incomplete transactions. But it plays havoc with the need at times or in certain roles (e.g., as researchers conducting field observations) to recognise the difference between what we actually observe and what we think things mean, how we wish things might be, or what we believe things ought to become (p. 169).

Wolcott was apparently warning me that to observe is human, to interpret divine (to revise an ancient aphorism). When ethnographers engage in observing

[9] Though frequently quoted themselves, Putnam and Pacanowsky (1983, p. 73) misquoted his axiom in a more politically correct form as "Everyone his or her own theorist! Everyone his or her own methodologist!".

human social behaviour, they are dealing with actions and their meanings. “The problem is rooted not in the fact that we do not know what other people mean but that as humans we are accustomed to supplying meanings of our own” (1994, p. 167). Agar (1986) famously wrote: “When you stand on the edge of a village and watch the noise and motion, you wonder, ‘Who are these people and what are they doing?’….You need to learn about a world you don’t understand by encountering it firsthand and making some sense out of it” (p. 12).

The act of observing lends itself to multiple possibilities for making a recording of what is observed. Wolcott (1994) suggested four possible strategies to guide the subjectivity of the researcher-observer: to set out to observe and record everything; to observe and look for nothing; to look for paradoxes; and to look for the key problem confronting the people under observation (p. 160). Wolcott believed that the answer would emerge from the context. “Context always gives us a push (and usually a shove) in terms of what the observer should do” (p. 167). My context was to push me to adopt the first path initially and later, the fourth.

Finally, what should I do about turning the experiences, observations and interpretations into text? Clifford (1986) reminded me that the historic conventions of ethnography provided good guidance:

> In classical ethnographies the voice of the author was always manifest, but the conventions of textual presentation and reading forbade too close a connection between authorial style and the reality presented.
>
> Moreover, the actual field experience of the ethnographer is presented only in very stylized ways.
>
> In the sixties this set of expository conventions cracked. Ethnographers began to write about their field experience in ways that disturbed the subjective/objective balance (p. 13).

Forty years on from the cracking of the conventions, ethnographies of organisations are able to achieve peer acceptance in so many forms that there is almost unconstrained choice of methods of transferring the research to paper (Hodson, 1998). For me, my two intentions were, firstly, to allow the process of textualisation to assist me to discover the answers to my research questions; that is to

say, the telling of the story would 'emerge' a theory which was grounded in the experiences encountered (Strauss & Corbin, 1990). My second intention was that the story which I was to write would elucidate and not obscure my experiences, observations and interpretations; that is to say, my account would be intelligible. As Mills (1959, p. 218) argued about the social sciences: "To write is to raise a claim for the attention of readers." To honour that claim, Mills appealed for an intelligibility of writing which transcends any complexity of subject matter. "Lack of ready intelligibility has little or nothing to do with the complexity of subject matter, and nothing at all with profundity of thought" (p. 218). Instead, he argued, unintelligible writing is a way for scholarly writers to avoid the scurrilous charge that their work is superficial because it is readable.

My aim, therefore, is to write an account of my personal ethnographic research experience, what it meant to me, and hopefully what it might mean to others.

* * *

These were the many deliberations which preceded the start of my research at the Orco refinery. To summarise the result of these deliberations: my study would be an ethnographic organisational cultural study. This followed from my acknowledgment that, while the refinery produced alumina via its pipes and machinery, the organisation that made it operate was largely socially constructed via the actions and cognitions of its members at all levels (Barker, 1999, p. 16). To analyse the cultural reality of the refinery would take me nearer to understanding the symbolic meanings of the daily actions of its people and the rhetorical meanings of its communication. This ethnographic method also acknowledges that safety is culturally produced from the interaction of the physical features of the refinery with the behavioural, organisational and cognitive practices of its people. If this were not so, I theorised, accidents would have been eliminated years ago.

The ethnographic process is a three-step one of 'learning, understanding and explaining' the society of the organisation and the social and rhetorical forces which influence, direct and constrain it (Barker, 1999, p. 16). It requires deep immersion in the working lives of the people, observing the way they conduct their affairs, and then a careful recording, deep analysis and finally an interpretation. There is also analysis and interpretation of the accounts of the people themselves (spoken and

written, formal and informal) (J. C. Meyer, 1995, p. 210), so that the meanings they attach to their social reality become the starting point for the researcher's own understandings (Batstone *et al.*, 1977, p. 276). It also involves consulting supplementary data from sources other than these observations, and verbal and written utterances of the people. At the expressive extreme are cultural artifacts of the organisation and at the emperical extreme there are often surveys done by either the organisation of itself, or the researcher (Barker, 1999, p. 17).

There is no sense in avoiding the fact that any social group outside one's own is, at least initially, a closed book, or a 'culturally alien community' as Raeithel (1996, p. 320) described it. Perhaps the best guidance for me as I prepared to enter this culturally alien community of the Orco refinery was the growing body of published workplace ethnographic accounts. Hodson (1998) identified no fewer than 108 English-language workplace ethnographies published in 83 book titles (p. 1175). I examined as many of these as I could obtain which were useful for my research.

* * *

I began my research through the 'front door', with initial meetings with the Refinery Manager, safety executives and members of the Communication Group.[10] I selected this point of entry partly out of curiosity and partly out of practicality – curiosity, because I was already feeling inquisitive about the opinions of the top managers about those they managed, and of the communicators about those with whom they communicated; practicality, because these people had a broad knowledge of the refinery, so asking them about the facts of the place was likely to give me a comprehensive answer.

There was a further reason why I started at this level: the physical layout of the refinery. As I have explained, the administration section of the refinery where these people worked was located immediately outside the refinery gate. As a new arrival in this strange refinery, I found I could cope sufficiently with the strangeness of this administration building and its workers. I felt quite unprepared to venture past the boomgate into the refinery proper, with its towering steaming tanks, rancid smells and menacing workers – at least that is how the workers appeared to me,

[10] The small team of public relations practitioners which was responsible for conducting the refinery's formalised employee and community relations activities.

dressed in their red-stained overalls, goggles, hearing protection and hard hats. In fact, this step-by-step approach turned out to be a good way to begin for two other practical reasons. One was that the refinery is not a place to casually introduce oneself and strike up conversations. There are few people out and about to approach in any case, and the wearing of the protective equipment virtually precluded chatting to strangers in the workplace. The other reason was that the minimum pre-requisite for being in the refinery proper is to attend a full day's induction at a company training centre. (There was additional induction required for individual sections of the refinery, known as 'business centres'.)

In these circumstances, I was temporarily confined to the administration section until I could be in a position to 'network in' (Agar, 1980) with the people of the production section of the refinery. Everything seemed so new. I sat in on meetings at which very little made sense to me. I repeatedly failed to find the tea room when I wanted to make myself a 'cuppa'. More significantly, I found there was no workplace for a 'spare' person like me. It was rare to find a desk to work at. I needed to borrow someone's telephone or computer. With everyone very welcoming but very busy, I soon became anxious not to become a nuisance. It was not so much a problem of networking in, but of breaking into this ordered workplace and creating a space for myself.

Even after I completed my induction and could move around in the refinery, my lack of status still hindered me. I was allocated a small office to myself in another administration building used by engineers. This building was located deep inside the refinery, an ideal place from which to operate. At last I was able to meet people casually and begin to explore the layout of the refinery. However, before long I became aware of moves to dislodge me from my office; first by allocating a second person to the room, and then by allocating me to another room where there was no actual space where I could work. I sensed the engineers were not sure what to make of me.

> When you begin doing ethnography, group members are going to wonder who you are. They will listen to you and watch your behaviour, and they will draw on their own repertoire of social categories to find one that fits you (Agar, 1996 p. 104).

Eventually, an engineering manager told me that the space I occupied was needed for running the refinery, in other words another engineer. That made his priorities clear enough, even though I told him my project was about safety. I remained uncertain what the engineers and operational managers thought about my work during my entire time at the refinery. I had previously experienced engineers and managers in tough working environments such as this place, and their rule was that anything that got in the way of production was 'bad'. What did these Orco people think of the company's rule that safety comes before production? I felt I became skilled at accurately reading the responses of shop floor workers but the professional members of the refinery remained accomplished at presenting an equivocal demeanour to me. I was conscious of being a stranger among strangers.

In making my start at the refinery, I followed what I found to be a valuable approach in the schema of Agar (1996). I needed to decide whether I would study an intact work group or individuals randomly selected as representative of the whole refinery. I let circumstances make the decision. At first, I circulated in the refinery, chatting with people I was introduced to. I conducted semi-formal interviews with these people from all parts of the refinery. There were a total of 27 interviews of a half hour to one hour duration. In almost all cases, the interviews were held in the person's workplace and were tape recorded. Before each interview, I briefed the person about the purpose of the interview and of my study, explaining how my work was intended to help everyone to be safer at the refinery. I also explained my confidentiality commitment and asked the person to read and sign a statement to this effect. I explained the use of the miniature tape recorder; only once did the recorder seem to make a person perceptibly uneasy. Intentionally, none of the interviews followed a formal structure. Nevertheless, I usually had some specific issues which I wanted to include. The degree of direction which I gave to the conversations varied with the person. Some people were able to talk at length, remaining relevant and informative throughout, because these people appeared to have previously considered the issues we discussed. For them, I mainly allowed the conversation to take its own course. Only at the end did I ask specific questions about particular matters I needed to know about. Other people required more prompting by me during the interview.

I transcribed each of the interviews verbatim even though I had no intention o conducting anything like a discourse analysis of the transcripts. I did the transcriptions myself for two reasons: hearing the conversations again gave me a clearer understanding than during the interviews themselves; and it allowed me to consider my own contribution to the conversations and how it affected them. In this way, I tried to compensate for the personal and procedural effects which might have biased the information I was collecting. The personal effects included my own influence upon what people were thinking and saying in the interviews, and the procedural ones were the effects of the methods I employed such as tape recording the conversations (Hammersley, 1990).

The information which all these people gave me allowed me to tighten my circle until I felt ready to concentrate on a few people who fairly represented the variety of shop floor experience and to select the core subjects of my research. I found it was becoming easier to talk to people from whom I had earlier felt isolated. I was invited to safety and toolbox[11] meetings and met workers whom I then made arrangements to visit in their work locations. I began to develop a small number of key informants who arranged for me to watch work happening and to meet other workers. Eventually, and to my satisfaction, I became a recognised figure in some parts of the refinery where I was focusing my attention, particularly the Safety Department and the 'digestion' area of Southend where the raw material was initially processed. Ultimately, I felt I had met and got to know sufficient people to confidently choose to spend extended time with one crew in one shift – a crew I felt would be a suitable voice for a wider collection of workers. I had several crews to choose from, but those whose opinions I valued confirmed that my crew represented a fair average in several key indicators such as company loyalty/disloyalty, relationship to their supervisor, group coherence and communication, injury record and safety attitude.

Part-way through my time at the refinery, I realised I had not discovered or talked to the refinery's union leaders. This seemed strange in retrospect because all the shop floor workers at the refinery were members of unions and their pay and conditions were negotiated with these unions. Yet no union leader and only one

[11] Meetings of groups of workers generally chaired by their foreman and most often held at the start of their shift – originally named because the workers sat on their toolboxes.

significant union issue came to my attention during my entire period of research at the refinery. In his recent history of the company in Australia, Blainey (1997) described the industry's unions as 'active but not destructive' (p. 220). One senior manager of the refinery described the unions as not intrusive and essentially supportive. My lack of observation of active unionism at my refinery was similar to Roy's (1979) and he described the circumstances well. Roy spent his research time as a machine operator in a production line. He also saw nothing of the union in action:

> There was an international union, and there was a highly publicized union-management cooperation program; but actual interactional processes of cooperation were carried on somewhere beyond my range of observation and without participation of members of my work group. Furthermore, these union-management get-togethers had no determinable connection with the problem of 'toughing out' a twelve-hour day of monotonous work (p. 193).

Kusterer (1978) attempted to go through the formal channels in relation to the union where he wanted to carry out research.

> A standard piece of advice for would-be researchers of work situations is to obtain 'dual entry' by getting research permission from management and also from the union, if there is one. The first months of this research were wasted in fruitless efforts to follow this advice, and I now tend to agree with Roy (1970) that such a thing is almost always either impossible or inadvisable (p. 13).

In the end, all Kusterer came up with was bureaucratic obstructions from management and non-negotiable demands from the unions. So he went straight to the workers themselves and satisfied himself with their permission. Collinson (1992), in a similar setting, found that consulting with a union leader about his research plans led to pressure he could not withstand: "The trade union convener insisted on maintaining control of the research by choosing the first fifteen potential interviewees" (p. 234). In the light of their experiences, when I realised I had not spoken to any union leader, I decided to do two things. I would take my cues from the workers themselves, as Collinson did; and I would not force any union issue into my research. If one appeared naturally, I would include it.

This is not to imply that an ethnographic exercise is free from being a political act. I was determined throughout my time at the refinery to respect everyone

who agreed to participate in my work, or not to participate. I did not want my presence to be seen as a colonialist and neo-colonialist act by a person who "steals tribal lore and provides nothing in return to the population" (Clifford, 1986, p. 8). I was determined that the workers should only give their information willingly and that I would have an open-minded approach to everything they had to say. I would seek to return some worthwhile benefit to the workers. Edgren (1990) and Kusterer (1978) argued that returning ideas to their source benefits both the researcher and the researched. First, the researcher benefits:

> When we at a certain point of time draw out, or uncover dominating ideas and traits that powerfully affect life in an organization and document them, we catch an instant picture of the culture. Later on, this picture is given back to the organization. In this way we open up for the organization's own interpretation what we have found – i.e. what we think we have seen and heard. This is important since the difference between a correct interpretation and more common opinions sometimes seems to be subtle (Edgren, 1990, p. 174).

The researched also benefit:

> But, unlike much theorizing in social science, theory that is grounded in empirical reality should be useful also as a practical guide to the people involved in the social situations that the theory is about …. It is the ambition of this research to create concepts that will add as much to the practical knowledge of workers as they do to the practical knowledge of social scientists (Kusterer, 1978, p. 11).

Despite my best intentions in this regard, I was aware that no one would believe this until the end of my research. One of my key informants, Eion Muffett, said of my crew: 'If they see something change as a result of what you've done, then there'll be some credibility attached. If nothing changes, then you are just another one of those [people] who has drifted through.'[12]

In the end, I borrowed the following eight principles from authors whose advice I respected which I intended to fulfil during my time with the people of the refinery:

1. Carefully give advice about my research to the people I will be working with when launching into the study.

[12] Interview with Eion Muffett 15 May 2003.

2. Be certain to make it clear to the shop floor workers that I am not representative of management or unions, nor performing a kind of spying exercise for the company; nor am I there to pass ‘messages’ from the shop floor to management.
3. Take notes from the very first exposure to the refinery, so that my first impressions will be preserved against the danger of being altered or eliminated by later ones.
4. Pay attention to members of the workforce who are in minorities. I soon found that the refinery’s minorities included women and people from non-English speaking backgrounds. In the refinery context, even supervisors, foremen and workers from labour-hire suppliers fulfilled some of the characteristics of minorities.
5. Set a sufficiently long time-scale, six months at least (Barker, 1999, p. 17) and perhaps much longer. In fact, my research of the refinery extended for 18 months, including six months among the crews of Southend and one month of routine 12-hour shifts with my crew.
6. Be prepared to stay ‘loose’, especially at the early stages, and ask open and even ambiguous questions to avoid constraining the responses to my own interpretation of the social reality.
7. Observe, and constantly seek to alter the observational perspective. One useful observation habit will be to observe an event or process which an informant has previously described, or vice versa.
8. Review my tape recorded interviews, because I know from experience how much useful information goes unnoticed during the original interview.

* * *

Having selected my crew, I arranged with their supervisor to assemble the members (who I had mostly met already), and brief them as a group on my work and my wish to spend extended time with them. I chose to do this in their crib room where they spent their time when not actually engaged in work on the plant and machinery of Southend 1. As often happens at much-anticipated moments, the occasion was somewhat of an anti-climax, in that the crew were casually receptive to my request, to the point of apathy.

The crew consisted of twelve workers in three groups: the operators who kept this section of the refinery functioning, the process controllers in the control room and the process cleaners who cleaned the interiors of the big process vessels such as liquor heaters. (The operators and process cleaners actually had adjoining crib rooms but often gathered in the operators' room. I refer to a single crib room for convenience.) Some characteristics of this crew made themselves known to me straight away.

> In sitting with the process operators and the process cleaners, it was interesting that the former are a bunch of jokers and the latter are a comparatively quiet, serious and thoughtful group. My discussion with them about what I would do was characterised by these differences. In the first group, people tended to make fun of each other; for example, when Dave Bell gave me a long description of their work, they got into [ridiculed] him. On the other hand, the PCs were quite interested in my work and one of them even had a good insight into the nature of their 'tribe' (he nominated the concept).[13]

* * *

During my time at the refinery, many of the 27 people who I interviewed in depth remained interested in my work and contributed ideas and comments. Five emerged as key informants. They were:[14]

Jock Hay	A member of the Safety Department
Charlie Rogers	An operator in Southend seconded to safety duties as a Safety Co-ordinator
Frank Brown	A member of the Training Department
Merve Hicks	An active member of the SMAC team
Eion Muffett	An operator in Southend but not a member my crew

These five names recur in the pages which follow because I use their insights and comments to help me describe and interpret the working life of the refinery. They recur for another reason, too: because they represent the insights and understandings of numerous other members of the refinery which I obtained during my research. Rather than introduce and confuse the reader with such a large collection of names, I have allowed just these few to tell the story in the main. Of

[13] Personal research diary 22 March 2002.
[14] Further detail can be found in their biographies on p. xiii.

course, there are other named people – 44 in all – who make their appearances for the purpose of completing the story, but I hope that I have allowed the personalities, insights and understandings of my key informants to remain uniquely recognisable throughout this thesis.

The fact that the key informants represent the insights and understandings of many others was a form of triangulation of my data which goes towards validating my analysis and interpretation. During my research at the refinery, when I found that two or more colleagues shared very much the same understanding of an aspect of the their working life because of their own experiences, I felt justified in putting their understanding forward as a reliable representation of a more widely held understanding among their colleagues. This was the case, for instance, when Southend 1 operators talked about the sources of their job satisfaction – many apparently enjoyed rectifying breakdowns in the production cycle. When I found that two people or more people from different hierarchical or geographic stations in the refinery shared an understanding, I felt even more justified. This occurred in the context of my interpretation of toolbox meetings when I found senior managers who initially gave me the company line that the meetings were an important contributor to safety; but who, when I presented them with my findings, concurred with the view of the crews that such meetings were mostly a sham. Actually, this example was one in which my own observations also provided a triangulation of the data because my observations agreed with what I had learned from the senior managers and crew members.

The 27 tape-recorded interviews which I conducted and transcribed were an important resource which I drew on constantly. Each time I listened to the recordings or reread the transcripts I felt I gained fresh understandings. I also found that they were a reliable source because the information they contained was constantly being validated by the commentaries of others or by my own observations. I did not return the transcripts to the interviewees for validation reasons, as some ethnographers do, because I judged that this would in fact be of little value and probably impractical. To my mind, that the validity of what is said in an interview is established during the interview through the skill and attention of the interviewer. Asking someone to read through what he or she has said is inviting a distortion rather than a confirmation of the truth.

One of the refinery's minorities who I was interested to inquire into were the women – and I have noted above that only 36 of the 956 Orco employees were women. The validity of the ethnographic research method derives from its deep involvement with a carefully selected, but small, number of people in a research locale. In the case of the women of the refinery, there were only two who worked in production-related jobs and only one whom I was able to include in my research, Jeanette Drake. It was therefore hard to generalise about the female experience at the refinery, which made me tentative about my comments. Nonetheless, I found it important to represent Jeanette's experience of refinery life and to allow her a space to contribute her perspective, which may or may not be a gendered one.

In addition to my interviews and the time I spent with my crew, I attended many meetings at various levels of the organisation, ranging from top-level strategy meetings to local production meetings within business centres. In an organisation as large and varied as a refinery where 1,500 people worked, meetings were a most important form of command and control. For an observer such as myself, they provided an invaluable opportunity to learn some key lessons about the human forces which made the refinery work. My general lesson was that the prime outcome of these meetings was team-reinforcement. I had initially formed the impression that most of the meetings were poorly planned and run. There was often uncertainty about the location and time, about who was to be present and about the information upon which discussion was to be held. For example, here are my notes of a monthly Safety Strategy Team Meeting:

> This is the peak meeting for safety at the refinery attended by departmental heads. Mike Ferrari notes straight away that there is no representation for BCs 4,5 and 6. 'We are unfortunately under-represented here,' he comments dryly.[15]

Much of the time at these meetings, comparatively little meaningful decision-making seemed to eventuate and I found myself becoming critical of them. However, as time went on, I started to see such events in terms of their relationship-building and socialising effect, and for their flexibility – I was later told that the membership of the Safety Strategy Team Meetings (above) varies considerably as circumstances change. I surmised that the operation of the refinery was a lumbering process which

[15] Personal research diary 19 March 2002.

had developed its own local practices and where little was done at speed. Perhaps this was the result of the refinery having been operating for almost 40 years, producing the same product[16] for all that time. I found a universal belief that everything happened at a steady pace at Orco.

The organisation also produced innumerable documents, both printed and electronic, which I collected and consulted as best I could during my research. Among the most informative of such documents were the e-mails which flooded the refinery's intranet. While a methodical analysis of this electronic traffic might be enlightening, my approach was to analyse and interpret a relatively small number of electronic discussions which I selected on the basis of relevance to specific events. I looked for several features of these discussions: a span of seniority, a degree of debate or disagreement, and expressions of opinion and judgment about issues (rather than statements of procedure and protocol). The application of these criteria thinned out the number of prospective e-mails for me to analyse, although I remained surprised how lively and personalised much of the traffic was when I had expected it to be generally dry and procedural. There were even occasional examples of what the military might see as insubordination, as when a foreman e-mailed the refinery's chief of production challenging his new safety procedure and concluding with:

> As an authorised tagger in [deleted] I'm a little confused now as to how we support the system when changes are made to rulings without consulting all concerned.[17]

Other things which I collected or noted had the quality of cultural artifact (Schein, 1992, p. 18). Among these were the few examples of graffiti or defaced signs which I ever saw on site. (On a roadside flood marker someone had scrawled the names of three workers alongside three dates. I understood these to 'commemorate' the occasions when these workers accidentally flooded the location.) Notice boards sometimes caught my eye. In the building where I spent the most time, the 'Health and Safety Rules' on the notice board were five years old and carried the signature of the Refinery Manager four previous to the one who was currently in place.[18] Whiteboards located in crib rooms and foremen's offices were used to log

[16] That is not to ignore the fact that the efficiency of the refinery had improved markedly in that time.
[17] Internal e-mail 30 March 2001.
[18] This was despite a finding in a previous plant audit that safety notice boards needed improving.

the status of tasks for incoming shifts. An Orco artefact was the array of notices and illuminated signs displayed at the refinery entrance indicating the status of production, safety, costs and the environment. Alongside the reports were smiling green faces for good news or frowning red faces for bad news. Nearby, often to be seen were manikins dressed as Orco refinery workers acting out safety scenarios.

Finally, I recorded my moment-by-moment experiences at the refinery. I never did settle on the best way of doing this. While using my tape recorder in interviews turned out to be effective, I did not find a comfortable way of accurately recording in detail what the workers said and did in the work situations where my tape recorder was less practical. Occasionally I used the tape recorder for semi-formal interviews in which I introduced a topic and asked workers to chat about it. However, what was I to do about the casual comments and actions of these workers in the context of their daily working lives? I was determined that any recording technique I adopted would minimally affect these comments and actions, even though I knew that all ethnographic fieldwork must have some effect on those being studied (Emerson *et al.*, 1995, p. 3).

Sanjek (1990) helpfully distinguished four varieties of notes which can be made on location — 'scratchnotes' (quickly written during an event), 'fieldnotes proper' (fully fleshed-out notes written later), 'headnotes' (consists of memories and reflections never written down at the time) and 'filednotes' (any of the above further processed and filed after leaving the field). I found myself making use of all these kinds of note-making during my time at the refinery; the challenge always being to record the information in sufficient detail to be useful and with sufficient accuracy to be reliable, when discussions among members of the crew was both fast and subtle.

If discussions were brief; the perpetual asides and jokes even briefer.[19] The use of local jargon was confusing, and yet contained a wealth of revealing information which I needed to somehow record. The situation was partially saved by a custom among these workers to make their own written records of information needed for their work. For instance, the crew members wrote down details of their work tasks in small pocketbooks: comments such as '30B blow-off tanks, 2 needs

[19] In her ethnography of a similar plant, Harris (1987) described banter as the 'small change' of social interaction (p. 29). I felt it 'bankrolled' the social interaction in my crew because most of the local work arrangements were conducted in banter and much of the crew social interaction was, too.

changing.' It was not out of order for me to pull out my pocketbook at this time and write things down as well in my fieldnotes.

Mostly, I made my notes as soon after conversations or events as possible. I just had to learn how to time my note-taking appropriately, for I found people looked askance if I made notes immediately after talking to them. One piece of note-taking I did not adopt was the custom of the crews to write notes to themselves on the overalls they were wearing. At toolbox meetings at the start of their shifts, members of my crew would sit on desktops in the small foreman's office. The men's thighs soon had scribbled instructions all over them. I soon learned that this low-tech method had some useful qualities. One was that the notes were always available to be consulted quickly – though it always struck me as eccentric to see a man hoist his leg onto a table to read it. Another was the semi-permanence of the record. Written in ballpoint ink, the notes would progressively fade with laundering over the period of three or four shifts. I felt that this form of note-taking was important to the workers because writing on the company's overalls was a minor act of rebellion and also a riposte to what they regarded as the over-use of technology to communicate in the refinery. (I chose not to write my notes on my overalls not just for confidentiality reasons but because I did not consider myself entitled to adopt an action so personal to the crews.)

This more or less solved the 'scratchnote' problem. But it did not solve the problem of what LeCompte and Schensul (1999, p. 13) called 'inscription', the making of mental notes prior to making written ones. My ability to recall was simply too limited to record accurately the precise language the crew members used or a particular series of events. My solution, apart from doing my best, was to gradually teach myself the language of my fellow crew members. I concentrated as closely as I could on their conversations and utterances, and gradually built them into my own pattern of speech – although I did not attempt to match their use of crude language which, at times, became extraordinarily rank. Nor did I use many of my new linguistic skills among the workers themselves. I was certain it would fall very flat. I used the language in my head and found this made it much easier to remember what they said and how they said it, and to write up my 'fieldnotes proper' from the scraps of notes in my little pocketbooks. In the case of the technical language and jargon, I studied hard the processes of the refinery and the technical terms and acronyms so

widely used there. In the end, I believe I became reasonably technically proficient and could hold up my end of a discussion about the operation of the plant.

Having accomplished LeCompte and Schensul's (1999) first two stages of writing up my experience (inscription and description), the act of translation – putting in my own words the meanings and understandings of the behaviours and concepts I had witnessed – became both a creative and a mechanical exercise. My task was to analyse and reveal the multiple truths of the lives of the people I was studying (Emerson *et al.*, 1995). For this to occur, I needed to trawl the ocean of material I had collected. I placed all my notes into my computer in table form, each entry being a short segment containing a single concept. As I wrote, I inserted in a column next to it a summary phrase such as 'asbestos', 'crew safety concern' or 'hazardous work'. I left a third column blank. I did the same with the transcripts of interviews.

My next step was to gather together all the concepts contained in these notes and consolidate them into a manageable number of key concepts. Without forcing the exclusion of items or the merger of ones which were not closely related, there initially emerged 128 preliminary codings which represented all the concepts contained in the notes. From this unworkably large number, I sought to produce a smaller number of key concepts. Initially, some codings were strong enough to become concepts in their own right. Others I filtered out because I judged that their conceptual significance was not strong enough to survive. For the remainder, I performed a pattern analysis which allowed me to merge like-codings. Lastly, I retained a small number of codings which I judged were not true concepts but which I felt were markers for concepts. Some of these were simply events which I observed (such as rodding,[20] the practice of which led to a long-running saga during my time at the refinery, which informed my interpretation of behaviours and attitudes). The final output of this codification process was 17 items. To test the 'fit' of these items, I back-loaded them into the vacant third column of a portion of my notes. This process revealed that there were three missing concepts to achieve a comfortable fit

[20] The use of a 'home-made' L-shaped metal rod to unblock valves in the base of liquor heaters which is described in 'The war of the drilling machines' in Chapter 6.

with all my notes. The final selection of concepts which thus emerged through the use of my ethnographic tools[21] was:

Table 1: Key refinery concepts (in alphabetical order)	
1. Alienation	11. Measurement
2. Amateurism	12. Relationships
3. Climate	13. Rewards
4. Commitment	14. Rodding
5. Communication	15. Rules (& compliance)
6. Control mutuality	16. Satisfaction
7. Culture/safety culture	17. SMAC
8. Hazards	18. Supervision/management
9. Humour	19. Trust
10. Informal organisation	20. Women

The final stage of the ethnographic process after observation, description and analysis was interpretation (Wolcott, 1994). Here I was back on firmer ground trodden before me by experienced researchers of workplace cultures who could be my guides. Theories of workplace organisation abound (Aungles & Parker, 1992), as do theories about the contribution made by culture to the functioning of organisations in pursuit of their missions (Schein, 1992). My task was to progress beyond this material to an understanding of how the culture of the shop floor mediated the communication of safety, a context not previously explored. The following chapters of this document are intended to fulfil this task.

* * *

It is important to mention that the experience of the ethnographer often exceeds the gathering of data for analysis and interpretation. I have already discussed my wish not to exploit the people of the refinery for the purposes of my research but to return something of value to them in exchange. Further, interacting intensively with a group of people over a period of time builds friendships which can transcend

[21] Transcribed interviews, structured group and individual discussions, personal observations recorded in a research diary, documents such as e-mails and consultation with key informants about my interpretations.

the research. The workers of my crew entrusted the minutiae of their working lives to me while I was among them, even though I could never be one of them. There were times when this finely balanced relationship wavered. I felt particularly embarrassed when Darren Redman, a warm-hearted but anxious man in his mid-thirties, found me writing up my notes late one night. This was his first realisation that my research meant taking his words and placing them in a thesis. His look of confusion and antagonism hurt me. Didn't he realise that my research involved writing about what people said, I struggled to ask him? The awkward situation was resolved in the best 'traditions' of this crew when his workmates ribbed Darren severely for being so naïve. For the remainder of my time with the group, Darren would himself joke about this episode, and he would call me 'professor'.

My departure from the crew at the end of a month of 12-hour shifts night and day with them was difficult for me. This was a short period of time in the 18 months I spent researching at the refinery but I had certainly grown attached to my crew. Had they grown attached to me? There was rather too much crude teasing to be sure. 'Fuck off back to your books, professor,' was Darren's farewell comment.[22] Collinson (1992) had a similar experience when he began to withdraw from his group. One of the workers said to him: "Where've you bin, you lazy fucker? Before we were sick of the sight of you, now you're never here" (p. 235).

* * *

It is important for me to state finally that certain details in this thesis have been altered so as to preserve the anonymity of all those who have contributed to my research. *All* the names of people in this thesis are pseudonyms. In addition, in cases where the description of people may possibly identify them, I have altered the descriptions sufficiently to make identification impossible except perhaps through guesswork by close colleagues. In some instances, my job of obscuring identities was made easier when important positions have been filled by more than one person during my research. This was the case with the Refinery Manager, for example. There where three during my time. In addition to people, the name of the company, Orco, is fictitious and the location of the refinery has been left vague.

[22] One of my key informants, Eion Muffett, commented about this farewell: 'He wasn't actually saying to go off back to your books, he was saying to go off and do something useful with what we've given you.'.

CHAPTER 3:

GEOGRAPHY, PROCESS AND COMMUNITY

"In this place no day started. Nothing ended or began, things just went anonymously on. Morning was a start for some, an end for others"
(Ireland, *The unknown industrial prisoner*)

Like most people who live in this part of Australia, I had driven past the refinery many times over the years, hardly noticing more than the tall smoke stacks and the labyrinth of steel structures from which steam would blow across the highway in the seabreeze. Now, I was to put meaning into this enigmatic place – the meaning of its geography, its process and its community – the hardware of pipes and vessels, the transformation of rock into mineral and the labour of 1,500 people who work there. This thesis is about how these three coalesce into a refinery which not only competes against global competition but keeps its people remarkably safe despite some of the greatest of industrial hazards.

THE GEOGRAPHY

The refinery is in three main parts. First, there is a set of administrative, training and refectory buildings. Then there are the production facilities which I will describe in detail. Finally there are the materials-handling facilities consisting principally of a rail siding for unloading the raw materials, a ship-loading jetty for exporting the alumina and a waste disposal site. Located a short distance away from this site are a company recreation centre and social club.

I will begin my description of the geography of the refinery by following the arrival of a typical worker at the carpark for the start of his[23] daily shift. A workers' carpark can provide a range of information about any organisation. Kunda (1992) found a place where the employees of a high tech company arrived with their minds

[23] I have made him a man because the workers are predominantly male.

already in gear for a day's committed contribution to the company. However, the worker arriving in the refinery does not visibly reflect such commitment to his employer, but does evince fortitude and camaraderie, and appears to approach work as a means to a good livelihood. The arriving worker exchanges jokes with departing workmates who farewelled *him* just 12 hours earlier. The worker is driving a ten-year-old family car but all around are vehicles set up for towing fishing boats, off-road vehicles and recreational vehicles with messages like 'I'd rather be golfing'. The shift system operating at the refinery gives considerable free time to pursue private pastimes and these vehicles reflect it. The refinery car park also reflects crime. There are security cameras on poles, a security gate, and an alarm system in a motorbike shed which alerts the guards when someone enters. (I was to meet one motorcycle rider who had had his machine stolen from the shed not many months earlier.) The workers' vehicles are also threatened in another way; by alumina dust. Every shift leaves the vehicles coated in this dust, so much so that the company has installed two automatic car-washes on the road out of the refinery. Not far from the car park used by production workers, maintenance workers, engineers and administration staff there is another small car park used by the refinery managers as well as visitors.

It is a short walk to the entrance of the production area itself, with its boomgate and guardhouse. The entrance is a ceaseless passage of mostly heavy vehicles – trucks, cranes, semitrailers, contractors' utilities – and a few passenger cars. The cars have electronic devices which open the boomgates automatically, but most vehicles actually pass through with a wave in the direction of the guardhouse staff. Equally, the worker does not show any form of pass and is never specifically checked. Wearing the correct type of clothes – tank-tops, shorts, thongs and carry-bag slung over the shoulder – seems to confirm his *bona fides*. For one of the nation's most valuable industrial assets, security is casual, and did not seem to change after 'September 11'. The fact is, it is not the damage which people can do to the plant that concerns management, but the damage which the plant can do to people. Dressed so casually, the worker himself appears vulnerable as he enters the 'jaws' of this industrial monster. Inside the main gate, he will change into the prescribed work clothing of blue long-sleeved overalls, steel-capped boots, hard hat

and eye protection goggles. Now he is ready to cross over a blue line painted on the roadway which confirms that danger lies within.

* * *

The refinery was built almost 40 years ago to exploit enormous quantities of the raw material bauxite discovered nearby by processing it into the white powder called alumina. The raw material is a form of laterite known chemically as hydrated aluminium oxide but colloquially by the common name ‘bauxite’, because it was first discovered near the French town of Les Baux (Blainey, 1997, p. 19). The bauxite for the refinery comes from the hills above the coastal plain where the refinery is located.

Alumina is produced from bauxite using caustic soda as a solvent by the Bayer process which is simple in theory but neither straightforward nor pleasant in practice. The caustic soda is a strongly alkaline liquid which burns deep into your skin if you touch it. (The minimum treatment, even for a slight contact with caustic soda, is to run water on the skin for at least 20 minutes, followed by first aid.) The other main ingredient of the process is heat which is produced at the refinery’s own powerhouse.

The refinery was constructed on flat coastal land alongside the still waters of a natural harbour and barely above the water level. At first, there was only a single production unit or ‘train’, with the capacity to produce about 200,000 tonnes of alumina a year. But the refinery soon began to expand rapidly as the world demanded more and more aluminium. In his history of the company, Blainey (1997) explained: “[The] refinery grew faster than anyone had predicted when the wire fence was erected around the empty site” (p. 125). In 1966 another unit was completed, which doubled output, and a third unit followed the next year (p. 115). By the end of 1970, the number of trains had reached six and the production capacity was 1,250,000 tonnes of alumina a year (p. 124). Not only did the site now show the strain of this expansion, but the people working there were aware of how crowded were their conditions compared with those of more recent refineries scattered around Australia.

* * *

As the worker proceeds down the roadway to his workplace, everything around him gradually changes colour from white to brown. For the refinery is two-

toned, as if designed in colours which were fashionable 40 years before. However, the colours signify something more fundamental than fashion and are a by-product of the Bayer process itself. The refinery is stained brown where the bauxite is initially crushed and processed. It is stained white where the pure alumina is produced. The ochre zone is the dirty, smelly, steamy and leaky section, where the workers are assailed by the heat which radiates from the processing vessels, the din of innumerable pumps, the streams of hot seeping liquid and the humid gush of steam on the skin. This is where the worker works and where I spent most of my time while at the refinery. The white zone is the clean end, where heat from the 1,000 degree processers is the worst affliction.

The names given to these two halves of the refinery do not reflect their colour but their geographical location. The ochre half is called ‘Southend’ and the white half ‘Northend’. Intersecting the whole site are tarred roads (also stained ochre and white respectively) with signposts which read Powerhouse Parade, Mills Rd and 3X Avenue.

In Southend, the arriving worker can see that most of the processing machinery is located in what are referred to as ‘buildings’, but which are really frameworks of steel girders holding the production vessels and pipework some six storeys high. The array of equipment in these buildings is indescribable. For the new worker, it is impossible to decipher just by looking at it how all the pieces relate to each other. If there is logic in the arrangement, it is not obvious. No wonder that the new recruit needs between two and three years to learn the refinery well enough to do his job without direct supervision by an experienced workmate. At ground level, each building in Southend has a four-sided dam with concrete walls 30 centimetres high. The purpose of these dams, known as ‘bunds’, is to trap any spilled liquid and direct it into sumps from where it is returned to the production cycle. I was to find during my time at the refinery that the bunds are in constant use because of the large quantity of liquid which routinely escapes. There were even occasions when an upset in the powerhouse required boiling water to be discharged in enormous quantities outside the bunds into the grounds of the refinery. Then, the refinery became a flood scene. All around, the roadways became steaming lakes and there were flood height markers at the kerbs. Being outside the bunds, this water took several hours to drain away into gutters, allowing the roads to both dry out and cool down.

The buildings and equipment of Southend are the province of operators who seem to draw their self-respect in part from their intimate knowledge of its complexity and from their ability to make it all function. Southend does not belong to them, but it is reliant on them to achieve performance. The workers feel that management does not have the same allegiance to Southend, lacking both their intimate knowledge and their respect for the machinery. What they hope is that management will acknowledge that within the boundaries of this place their judgment should be prized. Turner (1971) discussed boundaries in industrial plants, distinguishing between the observable physical boundaries which aid the manufacturing process and less-observable socially established ones. Of the latter he said: "These can only be established with the acceptance of those who come into contact with the boundaries, and work-group definitions of areas may be different from those favoured by management" (p. 121). There were different but tangible rules about how one group at the refinery should cross the boundary in the area of the other. As I describe shortly, management believed in boundary-crossing if it helped solve management's organisational problems, whereas workers believed in boundary-crossing if it helped solve the workers' shop floor ones.

The effects of boundaries manifested themselves during my research at the refinery in relation to safety and communication. On their side, the shop floor workers had constructed a process for defining safety in terms of their long and intimate experience of the machinery and materials which endangered them. They waited in vain for top management to share this construction of safety and join with them in building a shop floor safety culture. Top management, however, doubted the honesty[24] of this safety construction and was determined to impose across the boundary its own safety culture. One of top management's means of doing this was to use communication which it constructed by its own culture. Thus an *impasse* was established which prevented further progress towards zero injuries. In fact, while I was there, the number of injuries increased.

In the other half of the production areas, Northend, the principal building is the enormous 'precipitation' department: row upon row of vertical vessels topped with wooden sheds – 'tall tanks which looked like silos standing shoulder to

[24] Some managers doubted shop floor workers' *knowledge* of hazards and risks to correctly perceive that all hazards did not warrant attention because they created negligible risk.

shoulder' (Blainey, 1997, p. 81). Workers tell the story that the design for these sheds came from the US parent company, which explains why they have sloping roofs – so the snow slides off. (This part of Australia has never had snow.)

To be a worker anywhere in the refinery, or to be a visitor like myself, is to drown in sensations. Though grim and dangerous-looking, the place also has a particular majesty. I was to discover that its finest moments were at first light or in the dead of night.

> At night, the plant is quite different from during the day. The dirtiness is not so evident and the variety of coloured flood lighting (sodium-yellow, tungsten-white and emergency-green) actually looks pretty. I can see the shapes of the tanks and pipes rather than the grime on them. Everywhere I look, small puffs of steam lazily rise from all sorts of places, and here and there more powerful blasts gush skyward. I go to the top of Building 35 and there is not a soul to be seen. I have a feeling of possession, all this is before me. A plume of steam blows overhead and a mild rain of warm wet spray lands on my face and mists up my goggles.[25]

* * *

Outside the gatehouse at the entrance to the refinery, are the management and administrative offices, a two-storey building. Here the working environment is peaceful, in contrast to the production areas. On the walls are large pictures of waste settling ponds photographed 'contre jour' to resemble Canadian lakes. There is also another visible contrast. The production areas are unkempt and old, and there is little to make the work lives easier because the facilities are minimal. In the offices, there is much to make the working life easier: little kitchens with coffee machines and fridges, magazine racks, curved mirrors to prevent people colliding where corridors meet, and no requirement for boots, hard hats, ear plugs or eye protection.

That is not to say there is no work pressure. The refinery is under constant demand to be more competitive with other aluminium companies around the world, and with other refineries belonging to the company. The management team is caught in what one Refinery Manager called 'perpetual cost-reduction'.

> We measure energy cost-per-tonne. We've got all these smart engineers always looking for better and more efficient ways to do it. We've got a very good R&D group. Even the wages people out there

[25] Personal research diary 3 April 2002.

> and the way they operate [contributes to cost reductions]. So every year we should be able to improve ad infinitum. This place has gone from about 13Gj [gigajoules of energy] per tonne to under 12. If you'd said 10 years ago that we'd be producing at 5,700 [tonnes a day] with an energy of under 12, people would have laughed at you.[26]

Everyone has to participate in keeping the refinery viable: a view communicated in places such as the refinery newsletter which carries regular articles explaining how everyone must contribute to the struggle for competitiveness and warning of the dire consequences of poor performance. As if that is not sufficiently threatening, the company's head office in Cleveland has demanded that operations around the world find savings of US$1 billion a year – although this is described as a 'challenge'. 'We have the 2003 Challenge of the $1 billion cost reduction. They split the pie up and we have to come up with our reduction,' said the Refinery Manager.[27] One of the reductions is jobs – 130 of them, or more than ten per cent of the Orco employees. Many workers still remember the last major reorganisation of shop floor staffing arrangements, described by Blainey (1997):

> The recession of the early 1990s and the slump in aluminium process promoted another step towards reforming the workplaces….Its employees had the motivation to act because they knew that they could lose their jobs – if a refinery had to be closed, [this refinery] would be the first to disappear. At [the refinery], a radical solution was proposed. All overtime payments would be abolished: in return the workforce would receive an annual salary. The deal was accepted. (p. 226)

Blainey rather grandly described as a 'miracle' how the new arrangement made employees team-spirited and less determined to be idle. He also told how the workers found fulfilment: "Talent and ideas that were previously neglected or under-used began to blossom in many teams" (p. 227). A decade later, some workers saw the new round of changes as robbery. One of them, Luca Rossetti, explained how the new system of shifts described by Blainey had eliminated the benefits of overtime. However, what they had received in trade-off then was now being clawed back in the proposed new system. This new reorganisation would mean the effective end of 12-hour shift system for the operators and process cleaners. At night, there would only be skeleton crews in Southend to perform emergency or unexpected tasks. The other

[26] Interview with Dennis Lloyd 7 February 2002.
[27] Interview with Dennis Lloyd 7 February 2002.

members of the crews would change to ten-hour daytime shifts. Instead of cycles consisting of 4½ days on and six days off, the men would be working nine-day fortnights. Moreover, 2003 was to be the year of a big performance audit. A management philosophy applied in many organisations is: 'If it can't be measured it's not worth doing'. It seemed to me that the company applied the philosophy comprehensively. For 12 months, managers and workers had been preparing documentation for the big audit which was intended to reveal how well everyone was doing their job. There were about 200 indicators of performance just in the finance, IT and environment, safety and health areas at the refinery. Some people wondered aloud to me if anyone would take much notice of such data. One such was George Christo (who I will introduce shortly).

> Towards the end of the shift, George fills out an Area Report for the building he is responsible for today. He marks every place with an 'OK' or 'Yes' or 'No' to indicate that everything (valves, pumps, etc) is perfect or needs no attention, and signs the foot of the form. He makes the weary comment to me that no one pays any attention to these reports. He even claims that sometimes he and his colleagues write down totally wrong information, and no one queries it.[28]

Such a response to an apparently pointless requirement for statistical information is not uncommon. Kriegler (1984), in the context of an ethnographic study of the BHP shipyards in South Australia, described how a shipwright had an accident and took up duties in the planning department. The man was given the job of producing a large document of the fortnightly labour requirement of the shipyard, which went to the senior managers' meeting. But after making a glaring mistake which was not noticed, he realised that no one actually paid attention to his reports. "You've never seen anything so complicated in your life. It took me ages to complete and I really used to sweat over it until I discovered, quite by accident, that nobody looked at it or understood it anyway," Kriegler quoted the worker as complaining (p. 40).

[28] Personal research diary 1 April 2002. I was later told that the information on the Area Form was in fact noted by managers who did take appropriate action. The problem was that form-fillers such as George were not informed of the actions which resulted from their efforts.

THE PROCESS

The process of making alumina begins in Southend (see overleaf). The first stage is the crushing of the bauxite in seven 'autogenous grinding mills' (which the refinery people call 'rod mills'), rotating horizontal drums with steel rods inside, which pulverise the rock with recycled caustic soda liquor to form a slurry. Even at this early stage, the bauxite shows its worst characteristic, a fierce abrasiveness which turns Southend into a battleground. New rods frequently have to be installed in the mills, a highly hazardous job in itself. I had previously worked at an iron ore crushing plant, and I was reminded how powerful and dangerous such machinery is. These bauxite mills rotate at a furious pace, and make the mill building shudder. It is possible to stand just a few feet above these furiously spinning machines and be mesmerised by their power. Milling is a continuous rather than a batch process, which means that bauxite and liquor were fed in continuously and slurry called green liquor[29] drained out continuously. The slurry is piped to two enormous holding tanks nearby, the 'slurry storage'.

The next stage is one to which the workers of Southend devote much of their attention. More caustic soda is added and the slurry is cooked in the digesters. When a new worker joins Southend, such as I did, this is what he learns from the company's induction video:

> This is where we get right down to the business of dissolving the alumina from the bauxite. That happens more quickly at higher temperatures. To get there, we run the slurry through two contact heaters. The first is the grinding contact heater and the second, which is much bigger, is the digester contact heater.
>
> Slurry and heated spent liquor pour in at the top and power house steam roars in from the side – about 20 tonnes of it every hour. That brings the slurry up to about 145 C. And it builds up the pressure in the heaters. We need that pressure to go up to 4 or 5 atmospheric pressure because, without it, the liquor in the slurry would boil long before it got to 145 C.

[29] What is known as 'green liquor' is actually red-brown colour – I was informed that the term 'green' is commonly used in industry to refer to the processing stream, in this case caustic soda with dissolved bauxite.

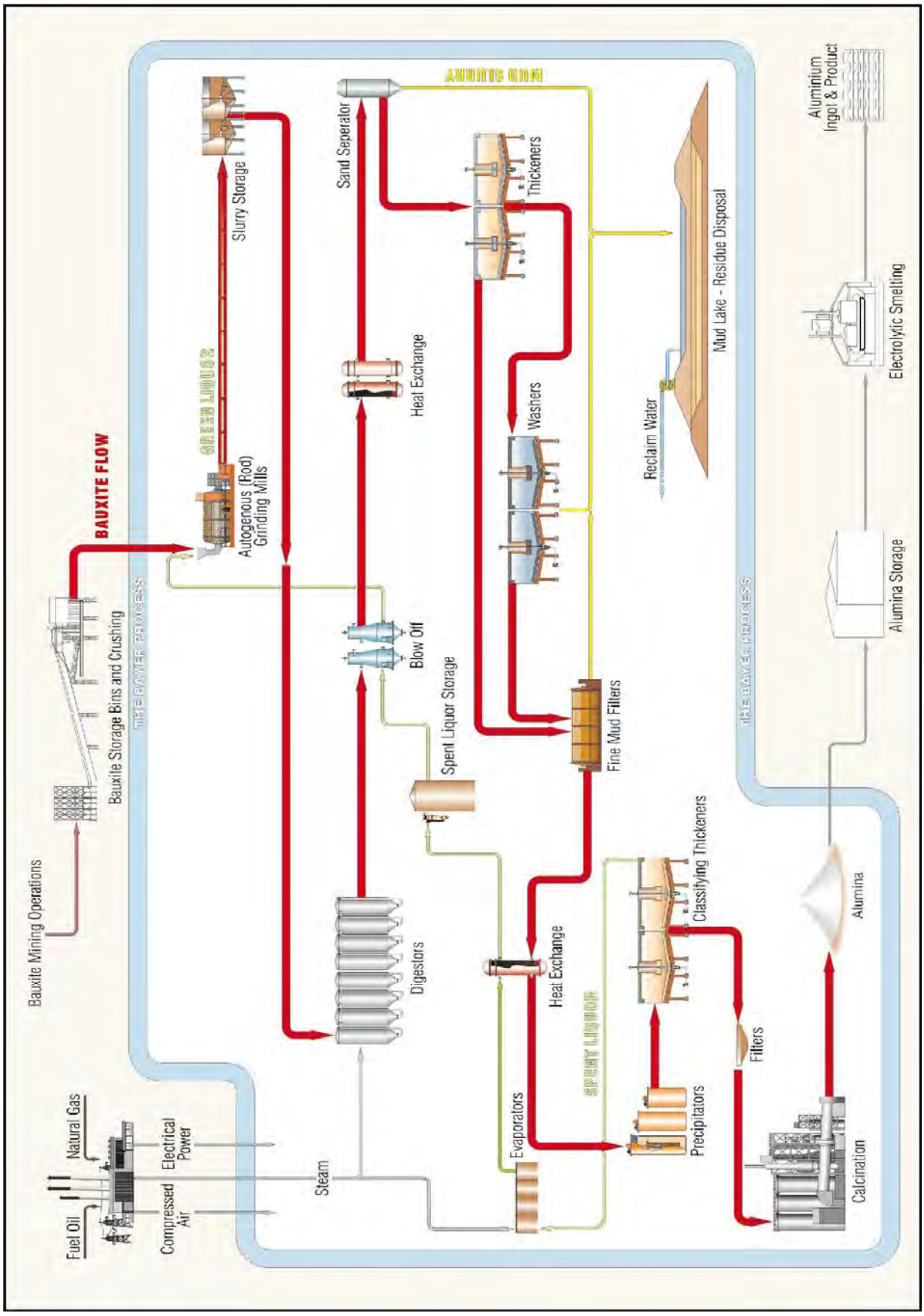

Fig. 1: The production sequence of the refinery

From here the slurry goes on to the digesters. They are really just huge pressure cookers. This is where most of the alumina is dissolved out of the bauxite. Bauxite slurry comes in from the digestion contact heater and comes into the top and swirls down and through this line of digesters. It takes about 30 minutes to go all the way through and in that time, most of the alumina has been dissolved.

Then we want to let the pressure off. We don't need it any more. And most of the rest of the refinery runs on atmospheric pressure. At the same time we want to begin to cool the slurry. We do both of those things in vessels called 'flash tanks'.

In the digestion building, each unit has four flash tanks, primary, secondary and two others called 'blow-off' tanks. Pressure is reduced every step of the way. We use the hot vapour that is drawn out of those flash tanks to heat spent liquor that is coming into digestion from precipitation in this line of tubular heaters.

The green liquor stream is now down to atmospheric pressure, but we've still got mixed up with that stream all the undissolved solids, sand, the mud and desilication products. We have to get rid of them. The first to go is the heavy, coarse sand. We get rid of that in the sand separation building. To get rid of the mud from the green liquor stream, the green liquor goes to clarification.

Once the green liquor has been through clarification and has had all the fine mud removed, it is still too hot to go on to precipitation where it will be made to drop its load of dissolved alumina. We bring that green liquor back into the digestion area for some partial cooling. We do that by flashing and that starts in the heat exchange building (Building 40).

So with the green liquor cooled down and sent on its way to the next step in the Bayer process, which is precipitation, the digestion area has done its job. This area is a real cross-roads in the refinery. There's bauxite slurry, spent and green liquor, heat and steam all coming and going. Someone has to direct that traffic and that job is done in the control room.

* * *

Southend, therefore, is the 'cross-roads' where the bauxite is digested and the resulting green liquor is clarified. It is also a machinery 'breakdown yard'. The workers have no peace from the destructive effects of the abrasive bauxite. In fact,

much of their work involves either trying to prevent breakdowns or battling with the effects of them.

> The silica prominent in the bauxite was sharp and abrasive. In liquid solution it flowed at high speed along the steel pipes and through the tanks, and after a time it cut its way into sections of hard steel. At some points, the flow reached a sharp elbow in the pipe, and as the sharp wet sand changed direction it cut deeply into the bends of the pipes. Frequent repairs had to be made, causing delays to a process that was normally continuous (Blainey, 1997, p. 83).

Often, I watched teams of workers struggle to maintain anything near 'continuous' production as breakdown followed breakdown.

> Still trouble getting the place to operate properly….There are breakdowns all over the place. The operators are arguing among themselves because of the greater workload and the tension. One task they are given from the control room requires them to shut down a unit (and to do this shut down a number of valves for steam, liquor and slurry have to be shut) and they become very heated in their discussion about it before heading outdoors. They eventually go but I can hear them cursing as their voices fade into the distance.[30]

Another constant problem occurs in the thousands of shut-off valves located along the pipework. Most of these valves are manually operated by bashing their handles with sledge-hammers, and they 'scale up' or accumulate solid material which prevents a perfect seal. The valves then 'pass' (leak), which means they do not fully close off the liquor flow and no one can work on any downstream equipment.

* * *

The workers I spent time with all complained about the lack of satisfactory equipment to do their jobs properly. One night, there was a major flood of caustic liquor which filled several adjoining bunded areas of the digestion building. The building's sump pumps were not working well enough to cope with the rising red tide. Portable air-driven pumps called 'squealers' were required but these, too, had broken down. The foreman refused permission to break into a store where other squealers were kept.

> We go outside, where I can see where two squealers are being used to transfer liquid from one bund to the next and to the next, in the hope

[30] Personal research diary 12 April 2002.

> that it will reach a sump pump which is working. The two squealers are in fact not operating at all. We pick our way round the rising ponds of liquor trying to make the squealers go. It takes half an hour to fix one pump by pouring thick oil into the air hose, but the other one refuses to operate.[31]

These frustrations and breakdowns in Southend do not occur in isolation. There are teams of people waiting in Northend for a steady supply of high quality green liquor. The reputation and self-worth of Southend's workers rests on them fixing the problems and impediments to this flow.

THE COMMUNITY

Blainey (1997) described the role of the refinery's shop floor workers in attending to the 'industrial intestine' of the refinery. "The long intestine was patrolled by a regiment of shift-workers who, labouring around the clock, walked along it to monitor the process or clean up the inevitable spillages" (p. 84). In my time, monitoring was performed by a second regiment: the process operators in the control rooms, and various engineers who could also watch the state of the plant on their networked computers. The operators were directed to the trouble spots by the workers of the control rooms.

'My Crew'

During the 18 months of my fieldwork, I spent considerable time talking to the people working in Southend. The culmination was a month working as a member of one particular group or 'crew'. This crew worked in Southend 1, the very initial stages of production consisting of the rod mills, digestion building and associated buildings. I was with them for their full set of 12-hour shifts, day and night, and I call them my crew in this document. This crew represented one shift. There were four other shift crews (plus a small relief shift crew) in Southend 1 and they rotated with each other so that there was always one crew on duty. I had already spent periods of time with these other crews and with similar crews of Southend 2, the clarification area.

[31] Personal research diary 23 April 2002.

I will now introduce the members of my crew in Southend 1. As I have previously explained, the names are pseudonymous. In fact, their descriptions are a synthesis of the people of several crews. I hope I have therefore successfully concealed the identity of individuals, although some will probably recognise individual traits of various colleagues. One trait which I have not concealed is that all the crew members were male.

Foremen

Chris Jones	The permanent foreman
Bert Entwhistle	A process controller who became trainee foreman

Process Controllers

Angus Hay	A middle-aged Scot
Harry Slocombe	The quiet member of the crew

Operators

George Christo	The safety and health representative for the crew
Dave Bell	The oldest member of the crew
Darren Redman	The youngest member of the crew
Fred Jamieson	A Scot who is the personality of the crew
Greg White	An employee of a labour hire company

Process Cleaners

Luca Rossetti	The informal leader of the cleaners
Norm McLeod	A quiet, methodical worker
Peter Cater	An amused observer of events around him

Process Controllers

It is the job of the process controllers to operate Southend 1. They work in a control room in a concrete block building located deep inside Southend. The building also contains small offices for foremen, training officers and the like, plus two crib rooms on the ground floor, while upstairs there are offices for supervisors and managers, and a meeting room. The building opens onto one of Southend's main thoroughfares.

Generally, two controllers at a time work in the control room. They share a desk which has an array of five screens and computer monitors on which can be displayed vast quantities of data representing the status of equipment in Southend 1, and from which the controllers can activate thousands of valves and switches. The process controllers constantly flick from data display to data display, scanning the numbers, colours, graphs and flow charts. Every few seconds, an alarm buzzer

sounds, although I never saw any response other than to silence it. When they are not attending to the monitors, the controllers tilt back their executive-style armchairs, place their boots on the desks and read novels or chat to visitors. Sometimes, in the early hours and when all is well, one of them goes to sleep – although this is a punishable misdemeanour.

The process controllers are experienced operators who receive more pay and a higher grading for being controllers. Thus, the operators are Level 10s and the controllers 11s. (The foremen were 14s.) Controllers remain closely associated with the operators, but are the 'brains' of the crew while the operators are its hands. When the controllers' monitors show that some action is required out in the refinery, it is the operators who carry it out. At the centre of the controllers' desk is a two-way tannoy which they call a 'squawk box' and the controllers use it to call up the operators' crib room. These calls to the operators are generally in the form of requests, and the operators' responses are generally negotiated. The style of negotiations is midway between taciturn rudeness and dry humour. Here is an example of an exchange as viewed by me in the crib room.

Controller: Darren – can you open the bypass in 30B again?

Darren (He catches the eye of another operator and they smile weakly. Then he leaves his chair and drags himself slowly towards the squawk box located on the wall across the room, and pushes the press-to-talk button): Yep.

In this example, the operators do what is asked. Sometimes they precede their agreement with a play of refusal. Mostly, as soon as the squawk box switches off, the operators swear crudely but feebly at the process controller, then go off to do the job. Occasionally, operators refuse the controller's request outright, and this tends to occur at the very start of the shift or near the end. (I observed that a refusal would soon bring an irritated foreman into the crib room and an argument would ensue about whether the previous shift should have done the job or the next shift should.) The process controllers also have squawk box communication with the production buildings of Southend 1. Loudspeakers are located throughout these buildings so that operators can discuss issues directly with the control room. The background noise of the plant is so great that the speakers are set to high volume. It is therefore possible to hear conversations between controllers and operators echoing eerily through the

buildings. Because these conversations can be overheard by anyone, they are noticeably more decorous than the ones in the crib room.

Being experienced former operators, the controllers occasionally do a little work in the plant when they feel like a change. Only once during my time with my crew did I see a controller do any major operator work, and this was strongly resented by his operator mates who gave him the ironic title of 'hero' for it.[32] However, the separation of duties characterised by the role of process controllers was about to end, with the job restructuring program to which I have already referred. Although I did not stay to see the change, a similar change occurred at the chemical plant researched by Harris (1987) in the 1980s. She described this change: "Until relatively recently, control room operators had been a distinct grade of men, regarded as specialists in doing a particularly responsible job, but changes in the operators' job structure…had meant that most operators were now ultimately trained to take their turn in the control room" (p. 34).

What struck me, as a newcomer to the refinery, was that such low-status workers as the members of my crew should be managing such high-status equipment. In fact, the crews (controllers, operators and cleaners) might not have formal qualifications but are quite highly paid technicians. The viability of the refinery depends on them to produce a steady supply of green liquor round the clock. When there were problems, it is the controllers who try to diagnose and rectify them. I observed that only after problems persisted did an engineer or manager arrive in the control room to help. Harris (1987) described her very similar situation in a British chemical plant:

> Control room work was vital for the efficient running of the plant and the safety of the shift. The man in charge was at the nerve centre of the plant.…In the normal course of events his judgement could make a great difference to the efficiency with which the plant ran. This may seem surprising, but despite all the automatic monitoring devices, there was still much scope for individual decisions about the settings of the controls.…Supervisors had an ultimate responsibility for plant productivity, but the men on Plant X had won a considerable degree of freedom to work in the control room without being continually checked (p. 117).

[32] Described in Chapter 4.

Particularly at night, when the regular engineering and maintenance staff were absent, the refinery's controllers and operators enjoy their own considerable degree of freedom to trouble-shoot problems and find solutions.

The Southend 1 control room I have described is in fact only half of the control room for all of Southend. A few metres from the Southend 1 control desk is an identical desk for Southend 2. The two are together because what happens in one part of Southend affects what happens in another. For example, if there is a reduction in the throughput of the digesters, the Southend 2 controllers have to make adjustments. And if machinery is out of service in Southend 2, digestion has to begin reducing throughput. There is frequent swapping of information via the simple process of calling to each other across the room. A Southend 2 operator, Eion Muffett, said that the two groups of controllers are a cultural bridge between the crews of Southend in that their close working relationship tends to equalise their working attitudes, rites and practices; and that these are then copied by other members of their shift. The outcome, he described, is therefore that there is more similarity between equivalent shifts across Southend 1 and Southend 2 than between the five shifts in each area of Southend.[33] Here are his typologies of the five crews of Southend 2 which he believed were replicated in Southend 1:

Shift A	Belligerent and inward-looking
Shift B	Boisterous
Shift C	Thieves of anything 'not bolted down'
Shift D	They politicise issues and trivialities (not necessarily consciously)
Shift E	Pub boys – good timers who tend to socialise together away from work

When the control room was built, its designers may well have envisaged an environment in which controllers, dressed in dust coats, operated delicate electronics in spotless surroundings. Evidence of this intent was visible in the large glass windows which shut the room off from the rest of the building, and the notice at the door forbidding boots to be worn inside. But this was a workers' workplace. The lino floor was long ago indelibly stained bauxite-brown from the tramping of boots. Dust lay on all the electronic equipment and the arms of the controllers' chairs were threadbare. As Harris (1987, p. 48) found in the chemical works she called Plant Y, the control room building was also a social centre, at times 'like Waterloo station'.

[33] Personal research diary 12 September 2003.

The Southend control room was likewise a social magnet. Lots of people would drop in and it was hard to distinguish the chatter from the work at times.

The Operators and Process Cleaners

The two other groups of shop floor workers in the Southend 1 production crews are the operators and the process cleaners. The operators are the workers who keep Southend running on a moment by moment basis. True, there are maintenance tradesmen who repair or replace equipment which breaks down, but the operators have the job of keeping the product flowing through the system. As I have explained above, they are under the direction of the control room staff who can see on their monitors the full picture of what is happening, and where problems are brewing.

There are separate but adjoining crib rooms for the operators and the process cleaners respectively. The rooms are about seven metres by seven metres in size with fridge, food heater and microwave oven, squawk box, cupboards along one side, a table and half a dozen chairs mostly in decrepit condition. For some reason, there are maps of Europe and the US on the walls. The men take care of their own cleaning, including mopping the floor at end of each shift. When preparing for a job, they kit up in the crib room – ear plugs, hard hats, gloves, goggles and (sometimes) two-way radios. Outside the door, the operators collect their 7lb hammers from a steel locker, throw them over their shoulders, and march off into the steam. The style of wearing the company-issue overalls is not uniform, but most men wear them unbuttoned to the belly.

The operators do not have to be qualified tradesmen, and few are. The refinery's tradesmen, who perform the mechanical and electrical maintenance, therefore consider them lower in status. The operators in turn consider the employees of contractors to be below *them* in status even though they work alongside each other. My crew had one operator, Greg White, who was the employee of a company which supplied his labour. The operators earn good money, around $58,000 a year in 2002 including a standard loading for shiftwork. As employees of a large international company, they enjoy good non-salary benefits such as a retirement pension and health care. The hours are considered good, as well. During the period of

my research, they worked their 12-hour shifts – two day-shifts and two night-shifts.[34] Below is an example of a shift 'cycle' which begins at 6am on Monday and finishes at 6am on Friday, with the next shift cycle starting at 6am on the following Thursday.

Table 2: Typical 12-hour shift arrangement

	Mon	**Tues**	**Wed**	**Thurs**	**Fri**	**Sat**	**Sun**
Week 1	Day	Day	Night	Night	Off	Off	Off
Week 2	Off	Off	Off	Day	Day	Night	Night

This gave ostensibly a six-day break between shift cycles, although the workers found that the first day (the Friday in this example) was needed for sleeping. Every few shift cycles an extra 'utility' day was added so that the total of hours worked averaged 36 per week. This utility day was intended for special tasks, training or safety-related initiatives.

The operators' jobs in Southend 1 are rotated so that no one gets stuck with the worst job or monopolises the best. A small pinboard outside their crib room tells them who is allocated to which job for the shift. The operators consider their worst job is on the rod mills. The rod mills are dangerous. (A member of my crew, Luca Rossetti, told me he suffered a serious accident to his back while changing the rods. He spent 12 months on light duties and on pain-killing drugs before he could get back to normal work. Fortunately for the operators, rod-changing is not part of their current duties.) The worst part of their rod mills work is washing mills out in readiness for maintenance or rod changes. I found there is something strangely makeshift about this job and, in fact, about many operators' jobs. The mills are like barrels approximately two metres in diameter laid horizontally. Each mill has an access hatch and the operator's job is to partly fill the mill with water through this hatch, rotate the mill a few times to slosh the water round and then empty it out. Where I would have expected an installed water supply to each mill, the operators instead have to use a 2-inch (diameter) hose which they must throw through the hatch while standing on an adjacent walkway. The hoses are heavy, so that landing

[34] As foreshadowed above, this arrangement was soon to change to one in which most Operators and process cleaners would work day shifts of 10.3 hours in 9-day fortnights – only a skeleton crew would

them in the hatchway is difficult. There is generally an old broom handle left nearby which they use to help direct the hose but, even so, it often takes several heaves of a hose to score a hit.

I was surprised to find such makeshift methods in use for other jobs as well. From my first hours with them, I began to notice the operators using odd, hand-made tools to accomplish complex tasks. For example, sections of steel pipe about a metre long are used for levering the handles of valves. Steel rods about 15mm in diameter and welded into an L-shape are used to poke into drain valves to clear scale. In fact, there are various unofficial and unsanctioned implements kept in special locations throughout Southend 1 awaiting use by operators and other workers.

There is another unpopular and dirty task in the mill building. This is to collect up the odd pieces of rubbish spat out by the mills – mostly granite nuggets and pieces of tree root. This rubbish is called ‘chips’ and it is automatically ejected into ‘chip boxes’ located under the mills. Chip boxes are the size and shape of the barrow of wheelbarrows. The workers use a small overhead travelling crane to carry away the chip boxes to a dump from where their contents were loaded onto a truck by bobcat. This is a slow, tedious and labour-intensive task; one with very little apparent job satisfaction. Fred Jamieson was to suffer an embarrassing accident while doing this job.

* * *

Operators are also responsible for the frequently-required ‘screen box change’. Screen boxes are built into the pipework which carries the bauxite-laden green liquor around Southend. They trap (screen) lumps of impurities. They are installed in parallel pairs, so that one box can be left ‘on line’ while the other is isolated, opened and cleaned. This is called a ‘screen box change’. To perform a screen box change requires the effort of three or four operators because various valves and drains have to be opened or closed in the correct sequence. It is possible to perform the change without spillage, but mostly the condition of the valves results in hot liquor gushing out of the screen box as it is opened. It is the opening and closing of valves and the release of hot liquor which is the leitmotif of the operators’ work at this refinery. The valves are present in their thousands. They are simple

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continue the 12-hour shift system night and day.

devices consisting of a flange on the end of a threaded spindle which is rotated until the flange cuts off the flow of liquor. As I noted previously, the company has converted very few of these valves to be power-operated, so most require operators to bash the spindle handles, which are shaped like oversized wing nuts, with 7lb sledge hammers. This might sound simple enough, but it requires the subtle application of considerable force by the operators. For example, the tendency to 'scale up', referred to previously, demands more aggressive bashing to crush the scale between flange and valve seat. The managers have instructed operators not to bash excessively because it can cause arm injury over a period of time, but the operators find it difficult to decide what is excessive. The following entry in my research diary of a toolbox meeting talks about an injury to a Southend 1 operator which is contained in a report. It shows how easily accidents can occur even in normal situations.

> The report says that a member of another shift has had stitches in his eyebrow after hitting himself in the face with a 7lb hammer. There is considerable mirth about how anyone could achieve such an injury – it is April 1st after all. It is explained in the report that the accident was caused by the valve handle being rigid and causing the hammer to bounce back into the operator's face. The operator assumed that there was 'give' in the handle which would have absorbed his blow.[35]

This account illustrates that the energetic swinging of the 7lb hammers which characterises so much of the operators' work is a more skilled and informed chore than an outside observer might guess, and a more hazardous one as well.

A fourth major job for the operators relates to the heaters of Southend 1. The heaters are tall circular vessels about three metres in diameter containing pipes filled with green liquor and circulating steam. There are more than 100 heaters and they are arranged in groups of 10 to 15. Whenever a heater suffers some fault, it has to be taken out of service for cleaning or repair. It is the job of the operators to drain the liquor from the heaters through small 'butterfly' valves at their base. Though this is a straightforward task, once again it is the unpredictable behaviour of the liquor which makes it far from humdrum. While I was with my crew, the debate about the safety of this task became a battle between the operators and their supervisor.

[35] Personal research diary 1 April 2002.

Once the operators have completed the draining, it is the job of the three process cleaners to clean the insides of heaters and other vessels. The rules for their work make it inherently less hazardous than is the case with the operators' work, at least in terms of exposure to the caustic liquor. The reason is that the operators are permitted to work on equipment which is 'live' with liquor, steam or steam condensate, but the cleaners require all equipment to be isolated, identified with warning tags and free of any hazardous substances: in other words no longer 'live'. The cleaners wash the vessels with a five per cent solution of sulphuric acid. Working from mini control panels stationed in the buildings (not the Southend control room), the cleaners pump the acid from the acid storage tank through the vessels and into the acid discharge tank. The cleaners organise their supply of acid by road tanker, and are involved in its proper disposal after use. A second aspect of cleaning is to open up the baseplate of the heaters to manually clean the interior and to replace rods which have failed. Although the process cleaners and operators are close colleagues in their work, their tasks are separate, which is why have separate crib rooms next to each other.

These three groups of workers – process controllers, operators and process cleaners – therefore comprised the everyday shop floor crews in Southend 1 and one group of them was my crew. Other workers made their appearances during my shifts – their foreman, their supervisor, maintenance staff, electricians, engineers, safety personnel and workmates dropping in. However, my crew was a distinct social unit. They gave all these other people a verbal pummelling when they arrived and sent them packing when they were no longer wanted – the only exception being people with the seniority of Southend manager or above, who were greeted with degrees of formality.

I have described the normal duties of the crews, but there are opportunities for extra duties as well. The most common one is as Safety and Health Representative. Known by everyone as 'Safety Rep', this person is elected by his colleagues and has certain statutory powers specified in legislation, typically to represent workers' safety concerns to the company. It is up to each Safety Rep how much he actually contributes to safety. At a minimum, he attends the occasional Southend safety strategy forums and chairs crew safety meetings. The company is required to train, encourage and support its Safety Reps but this is not always the

case. One man had been a Safety Rep for two years but had not been sent on the 5-day course required by law. Moreover, management was aware that foremen were not accompanying their own Safety Reps to this training as they were required to do.

Other special duty opportunities occur on occasions. During my time there, crew members from Southend 1 were seconded to a team which contributed to the planning the new work arrangements to be instituted under the 2003 Challenge program of work reorganisation and job cuts. It is possible for workers to be nominated to any of a number of task forces or special groups including the Safety Motivation and Communication (SMAC) team. (I analyse SMAC's contribution in Chapter 7.) The refinery has created a special position of Safety Co-ordinator in each Business Centre. Any person interested in safety can nominate to be seconded to this position for six to twelve months.

The crews meet often to talk about their work tasks and about safety issues. The manager of Southend expects them to participate in a toolbox meeting chaired by their foremen at least every second day, although he was aware that some held only one meeting per shift cycle. Safety is intended to form a major component of these meetings. The foremen receives various reports for discussion. 'Significant incident reports' and 'Safety Alerts' contain information about safety-related matters. *Toolbox Topics* bulletins contain information from top management or the Safety Department. Separate from the toolbox meetings are occasional crew safety meetings chaired by the crew Safety Rep. These should be held roughly once a month, but many are far more infrequent, perhaps quarterly. The company has created standardised formats for these safety meetings, and reports are expected to be produced in prescribed ways. How much these meetings conform to the format depends greatly on the discretion of the person in the chair.

* * *

Injury, and its avoidance, are frequent topics of conversation among the crews. It is not hard to find someone who has suffered some serious injury or can tell the story of a mate's injury. An operator in Southend told me he had lost a brother in an industrial accident (not at Orco).The men tend to believe safety is principally governed by their surroundings, while management tend to believe it is principally governed by the workers' behaviour. This divergence of perceptions was borne out by the divergent safety focus I noticed in the two groups during my time at the

refinery. In this period, the company began the major project of implementing a behavioural observation and correction system. In contrast with this, the crews complained about the quality of the equipment which they were given to work with.

In this context, one day I sat down for a casual chat with a group of three Southend operators. My diary note reads:

> One of the three describes a horrendous accident a decade ago when a pump blew apart and severely injured him and quite badly injured a foreman. It seems that only 'good luck' saved one or both from being killed. The same man also received major caustic burns more recently and spent a month in hospital 'having skin peeled off every day'. Much of what they say is about management's failure to spend the money on 'fixes' which will make their work safer, while pushing them to be safer.[36]

Another time in their crib room, I talked with three other crew members about their accidents. Two of the men had what they described as 'mild disability' in their arms from swinging the 7lb hammers for 30 years. Yet it was the relative newcomer in the group with less than three years' service, who was wearing an elbow support bandage because of the strains of heavy work.

These different perceptions of the true source of accidents and injuries translated into a permanent stand-off between the shop floor workers and management. Management introduced 'better' methods of doing the work, which the men tended to resist. The men demanded safer equipment or procedures, which management mostly refused or introduced in ways which the men found unsatisfactory – although the men also conceded that engineering improvements had reduced some of their hazard exposures. While a large group of employees might be expected to complain about how their bosses treat them, if those complaints grow into a climate of alienation, then a company will have no goodwill upon which to build a commitment to safer behaviour. Such was the case with the management's behavioural observation project, the introduction of which was met with general antagonism among the workers to whom I spoke.

[36] Personal research diary 8 March 2002.

I had my own experience of alienation when it was time for me to receive a personal safety induction for Southend. This was to be an induction specific to the part of the refinery where my crew worked. It was a follow-up to a one-day general induction I had already attended for the refinery as a whole. The general induction had been a useful starting-point but did not avert my feelings of vulnerability when I first arrived in Southend to begin my research. At that point, I had no confidence about where it was safe to go, and what it was safe to do.

Frank Brown, a member of the Training Department, was assigned to induct me into my Southend-specific role. It was the day before I was to join my crew as a new member; an important day. My diary reads:

> I arrive at Frank's office for my appointment at 9am. He's not there. Various people in the corridors volunteer to help, but after waiting about an hour I leave a message for Frank to phone me and I return to my visitor's office. When he at last phones, he explains that something more important has come up and that he's sorry. He then tries to suggest that we will not be able to meet at all! I persuade him that we must meet straight away even if we only complete part of the induction.
>
> In fact, we have perhaps half an hour of useful time during which I watch two videos about the operation of the refinery. But the session doesn't make much progress, because Frank after lunch excuses himself because he is off to watch a demonstration of some new machines.[37]

As it turned out, I was fortunate that the members of my crew took great care of me and kept me safe from dangers. However, while I accepted that I was not a typical new Southend worker, I certainly wondered whether this was a typical experience.

In comparison with this experience, my general induction had been thorough and professional. The people making the presentations were well-informed, interesting and apparently committed to our safety.[38]

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[37] Personal research diary 27 March 2002.
[38] I describe the general induction in more detail later.

The composition of the crews of Southend is slow to change, so these teams became close social units, though not necessarily cohesive. My crew was cohesive to a degree. Various members socialised away from work – for example, going fishing and helping out with projects at each others' homes. One member had installed a large telescope at his home, and members of the crew (and others) had helped him install the instrument. Such social extensions of work relationships are customary at any workplace, but the making and remaking of the at-work relationships was more obvious than I had experienced. In the operators' crib room, the Scot Fred Jamieson was the dominant personality, leading much of the crib-room talk, organising the practical jokes on outsiders and continually challenging all those around him to verbal contests. He energised the social relations of the crew with his ceaseless talk and activity, but his continuous challenges seemed to have the purpose of drawing them into this small social group, while reinforcing his dominance of it. Within a few minutes of joining the crew, I realised that it was near-impossible to win an argument with Fred or tell a funnier story. Like the others, I resolved not to challenge him. Only the leader of the process cleaners, Luca Rossetti, could be on level terms with Fred Jamieson. Of the operators, the elderly Dave Bell was badly mauled by Fred at times and Greg was frequently told: 'You don't count, you're only a contractor.' When Fred was absent, the group was certainly quieter and possibly more cohesive.

Yet the crew seemed to work well as a team, which they were required to do by the intensity and danger of their duties. As Blainey (1997, p. 226) observed, they compensated for each other's absences and weaknesses. Even absences for what were clearly 'sickies' (an Australianism for spurious days off) did not seem to fuss the other members, who filled in during that shift. This internal regulation was made possible by the degree of self-management allowed to the crews. For example, the first hour of the shift was usually spent talking and reading newspapers. Actual work was rare in this hour, although it was sometimes done if there was a heavy workload expected in the shift. The list of anticipated tasks written on the whiteboard or scheduled by the foreman for a shift were not necessarily completed by shift-end. I was sometimes surprised that tasks which, to me, seemed really important were left for the next shift crew and sometimes beyond that. To a considerable degree, therefore, the crews set their own pace of work.

Much of this was soon to change as I have discussed previously. Under the arrangements for the 2003 Challenge, the foremen would work on day shifts only, along with most of the crew members. A new category of team leader would be created within the crews. Many people currently on 12-hour shifts would be moved to 10-hour day-only shifts, and the number of operators on night shift would be reduced from 5 to 2. The unions had given their assent to this change, but the crews were not convinced it would be a success.

However, this was in the future. For now, the long-established routine of 12-hour shifts, day and night continued without variation. The refinery ground on, performing its unchanging task of converting brown earth into white powder, and the crews of operators, controllers and cleaners who tried to keep it functioning fought against becoming like machines, too.

CHAPTER 4:

'BUCKETFULS OF NON-COMPLIANCE'

The Orco culture is like a jelly on a plate – you shake it and there's a lot of movement at the top but none at the bottom.[39]

Rules, and compliance with rules, are an important contributor to any organisation achieving objectives such as better safety (Hale & Swuste, 1998; Lawton, 1998; Leplat, 1998; A. J. Mills & Murgatroyd, 1991; Reason, 1990; Scott-Morgan, 1994). The communication and enforcement of organisational rules plays a crucial role in several ways including establishing a workplace culture and climate, giving all workers clarity of purpose which will enable them to efficiently perform their tasks and keeping them safe from harm. In discussing the productive value of rules to organisations, Gilsdorf (1998) quotes Deal and Kennedy (1982) as arguing that in a strong culture:

> By knowing what exactly is expected of them, employees will waste little time in deciding how to act in a given situation. In a weak culture, on the other hand, employees waste a good deal of time just trying to figure out what they should do and how they should do it (p. 15).

To workers, rules are both security and threat. Security in that they provide the mental framework for contented and safe work, threat because they contain the potential for sanctions (p. 15). As part of their 'reward systems', organisations should reward worker behaviour which complies with its rules, and avoid rewarding behaviour which conflicts with its rules (Kerr, 1975).

Gilsdorf (1998) argued that the setting of rules is a strong way of embedding values among workers. Workers look at the rules and reward system, as well as its messages, for signals about what the organisation really values (p. 185). She went on to analyse the interaction between rules/rewards and the responses of workers:

[39] Comment by the supervisor of Southend 1, Mark Dawson.

> If organizations reward the behaviors they say they reward, their messages are congruent and credible. If these messages are inconsistent, employees' responses will be at worst antagonistic (because contradictory and equivocal signals generate resentment) and at best unpredictable (because no clear signal is available to guide the well-intentioned) (p. 186).

The time I spent at the refinery coincided with a *blitz* on rules, which appeared to result from a change of Refinery Manager[40] and a change of stance among his senior managers towards rule-breaking. I was informed that discipline was to be more rigorous, that punishments were to be more often applied and that the previous policy, based principally on persuasion, would now include compulsion. Among the senior managers and safety staff whom I spoke to, this change was generally praised on the grounds that non-compliance with rules was the root-cause of most of the safety incidents at the refinery. One Refinery Manager, Dennis Lloyd, told me that his position required a strict and unequivocal adherence to the highest safety rule of the plant, that safety should not be sacrificed for production. 'Certainly, at my level, if I start hesitating on that it will magnify all the way down [the line], until you'd get the crew members saying: "Oh well, I can do basically anything I want." '

The struggle to get workers to abide by the safety rules of the refinery seemed to me to reflect a broader struggle to make the refinery itself operate according to its design rules (Blainey, 1997, p. 84). If the workers seemed contrary or even recalcitrant at times, then the plant seemed equally so. I had not previously experienced an industrial situation in which the work was a constant battle to keep a plant operating, a struggle not so much to get ahead but to avoid falling behind production targets or even avoid total stoppage. The battle seemed to weary all those who were involved directly in production – managers, process engineers and crews. In his year-end statement to employees in the staff newsletter, Dennis Lloyd said that production was lower than the previous year and well below the year before, and that 'we have…struggled' in a number of areas of the plant. However, this situation of struggle was differently interpreted from group to group in the refinery. I observed that managers and process engineers saw the contrariness of plant and workers as a

[40] As previously mentioned, there were three incumbents in this job while I was researching the refinery.

single problem. For them, the struggle was to devise ways of getting both of them to work according to their rules. The plant seemed to have its own undocumented rules and the workers their own unwritten ones. I have previously described how the crews in Southend had gone as far as to give themselves a work-free hour at the start of their shifts.[41] For this and other reasons, it was rare to hear a manager or engineer talk flatteringly about the commitment of the workers. The supervisor of Southend 1, Mark Dawson, described the commitment of his own crews as 'cherry-picking' the easy parts of their jobs. 'They do all the nice bits, the cherry-picking, and all the crappy bits of the job don't get done.'[42] For the workers, on the other hand, the struggle to get the plant to operate correctly often required them to devise solutions of their own making. They created informal work rules which they judged were more effective than the formal ones. They did not see themselves as part of the problem, but of the solution.

The workers had different battles to win as part of their struggle, and different rules of engagement for these battles. Bill Munro, an operator in his early 60s, said of his exposure to hazards of the job: 'Each time we go out there, we are aware that certain things could happen. You could be walking past a pump and the pump could explode – it has happened in the past.'[43] Luca Rossetti showed his displeasure about the issue of rules by remarking how easy it was for senior managers to comply with the safety rules which they made: 'They only have to worry about pricking their finger on a pencil.'

Sometimes the workers were left to conduct the struggle unsupported by management. I saw a small, almost poignant, event during a toolbox meeting when foreman Bert Entwhistle remarked on an item in a 'significant incident report' about the discovery of shredded asbestos material somewhere in the refinery. (Asbestos is a notorious cause of cancer in workplaces in Australia.) Bert briefly noted the item and was about to move on to the next one but was pressed to give more detail, particularly as to the location of the asbestos, which turned out to be in a production building 'over the back' and well away from my crew's workplace. Bert reassured the crew that the area had been taped round with barrier tape, like a crime scene.

[41] I describe another workers' adjustment to their working day in Chapter 5.
[42] Interview with Mark Dawson 6 February 2002.
[43] Interview with Bill Munro 9 January 2002

Luca responded with heavy irony that this temporary remedy should be OK because asbestos fibres were known to 'blow up to barrier tape, hit it and fall to the ground where they lie harmlessly'.[44] Asbestos is among industrial workers' worst health fears, yet the company's experts had chosen to respond casually. The crew exchanged silent glances but said no more.

* * *

The rules of a workplace which have an effect upon safety vary between two typological poles (Leplat, 1998). At one pole are rules which are indistinguishable from work procedures. To abide by these work rules means to work safely; while deviation from such rules means production is jeopardised. At the other pole are rules which are completely distinct from work procedures. To deviate from such rules means people are jeopardised. "In the first case, safety is a property of an action, belonging to a work procedure; in the second case, safety concerns a specific action, additional to the work procedure" (p. 192).

An example of the former at the refinery is the Standard Work Instruction (SWI) for each task which minutely documents the step-by-step correct ways for properly completing the work. ('We look at those more as how to do the job than safety,' is the way the Safety Rep George Christo described the SWIs.[45]) Examples of the latter are the vehicle speed limit on the internal roads and the requirement to wear hard hats and eye protection in all production areas. These are the poles. Most rules in a workplace have characteristics of both work rules and safety rules.

Why did so many people at the refinery attribute accidents to rule-breaking? I encountered no informed debate about the validity of this judgment about the ultimate cause of most accidents, even among the safety staff who all seemed to thoroughly endorse the notion. One of the most senior members of the Safety Department, Brendan Johnstone, described 'bucketfuls of non-compliance' which could readily be observed by anyone with a trained eye. He seemed as much concerned with the lack of enforcement as with the breaches themselves. He said there were foremen, supervisors and managers 'who should have more sense than walking by' such infringements.

[44] Personal research diary 23 April 2002.
[45] Interview with George Christo 4 April 2002. Many workers believed the letters stood for Safe Working Instructions.

There are well-established principles for determining the causes of accidents (Kletz, 2001) and these are not limited to rule-breaking. They look beyond a person's rule-breaking to deeper causes associated with the organisation itself. Reason (1997) argued that to look to the 'person model' of accident causation is seductive to some managers. "The difficulty lies in the failure on the part of some managers to recognize that there are other types of risk and other tools to deal with them." He added: "When the person model is the only approach with which you feel comfortable, then every problem seems to be a person problem" (p. 230). Hopkins (1995) argued that the person model is often employed because it is a cheaper strategy because it obviates expensive system corrections (p. 8). The ready blaming of safety breaches upon compliance issues did appear to me rather like what Juravich (1985) found in the electronic cable manufacturing plant he studied, where the production manager Carroll attributed breakdowns to dirt in the machinery. "Over the months I worked at National, Carroll would repeatedly see 'dirt' as the cause of a problem. I soon learned to be skeptical" (p. 30).

I soon learned to be sceptical, too. I suspected that the blaming of rule-breaking was partly the outcome of the refinery's adoption of a safety and health approach called 'behaviour-based safety' (BBS). This operant conditioning approach is predicated on the principle that inducing the correct performance of work tasks will directly eliminate the risk of accidents. Inducing such correct behaviour is done through behaviour observation, which is 'a systematic evaluation of exhibited behaviours (both desirable and undesirable) against a pre-defined checklist' (IFAP, 2001). In practice, BBS requires workmates to watch each other perform routine tasks and score them on a checklist under headings such as wearing personal protection, using the right tools, etc. It is therefore a process of bypassing all factors which influence a worker to break or comply with rules by habituating him or her to perform a task in a defined manner.

BBS was being introduced into the refinery during my time there and contributed to the development of a safety climate that asserted that complying with rules was necessary and sufficient to prevent accidents. Arising from this conviction about how accidents arose and were prevented, the refinery conducted a multi-faceted compliance campaign. Management intensified its threat of disciplinary action, and some workers were (temporarily) stood down as punishment for major

acts of non-compliance. The manager of Northend said to me: 'Are we getting the message across that we want all people to work safely at all time? The answer has to be 'no', because a couple of months ago, I had to suspend someone for four weeks without pay for some major safety breaches and we are still continuing to chip people for safety-type offences.'[46] To assist in 'getting the message across', the SMAC team of safety worker-communicators agreed to participate in this campaign although they did not seem sufficiently informed about the arguments to question its validity.

By contrast with what happened at the refinery, here is the description of a different response by an organisation which also believes that problem behaviour is the main cause of accidents:

> Analysis of ExxonMobil technical data demonstrates that multiple unsafe behaviors are linked to more than 90 percent of accidents.
>
> In Exxon's [sic] case, since most accidents are linked to unsafe behaviors, the key to prevention is to focus on promoting safe behaviors. This entails teaching employees how to identify hazards; providing them with appropriate tools and resources; demonstrating management commitment; involving employees; and implementing accident prevention processes (Toellner, 2001, p. 44-5).

Certainly, all of these response actions by Exxon were also in place at the Orco refinery, but they did not appear to have the balance and inter-relationship which Exxon achieved. At the refinery, the response to safety problems was now tilting towards solutions based upon total compliance with the rules. I found, however, that the meanings of rules and the understandings about compliance differed among the key working groups of the refinery. Each group (management, safety professionals, supervisors and workers) created its own meanings from the social domain in which it operated, and from the shared values of that domain.

MANAGEMENT

The management of an organisation supplies not only the rules, but also a mechanism of meta-rules for those rules to be applied. Mansdorf (1999) argued that management could raise or lower the significance of its rules via this mechanism.

[46] Interview with Joshua Black 12 March 2002.

"For example, a rule requiring the use of safety glasses can be quickly diminished if a senior manager walks around the plant without them. In this case, the organizational or safety culture promotes a sense that the rules do not really matter" (p. 110). He suggested another example:

> How many of us recognize the catchy phrase 'Safety First'? It's a common banner found in myriad businesses. Although this message appears on the bulletin board at many organizations, it is my hunch and observation that only a few practice what they preach (p. 110).

The application of the meta-rules of company such as Orco are mostly more subtle and difficult to discern than these examples. One Refinery Manager said to me: 'We can't get people to wear seat belts on site, yet mobile equipment is the greatest area of accidents.'[47] I heard some shop floor workers complaining that they could not get management to fix safety problems in the equipment which the workers felt made their work hazardous. They expressed frustration, just as the Refinery Manager did. They felt that there was a meta-rule relating to the goal of zero injuries which was that only one group, top management, had the right to decide how to reach this outcome.

Rules also provide rule-setters with opportunities to establish moral or social order (A. J. Mills & Murgatroyd, 1991, p. 18). As part of the compliance issue, the refinery was undertaking a 'housekeeping' campaign during my time there, encouraging all personnel to help keep the plant clean and tidy. Housekeeping is a common feature of rule-making in workplaces, its philosophy being that a tidy workplace is a more productive workplace. It also achieves two safety benefits: eliminating some hazards and creating a climate of carefulness. The housekeeping campaign was therefore somewhere between Leplat's (1998) two poles. Managers felt that there were legitimate grounds for making rules about tidiness into rules about safety, but I wondered if these were also grounds for top management to exert a reverse influence by muddying the issues of safety and cleanliness. One Refinery Manager, who had a general management rather than an engineering background, seemed particularly to concentrate on the issue of cleanliness and I wondered if it was because the more technical safety issues were outside his sphere of knowledge.

[47] Interview with Jon McIntosh 9 December 2000.

This manager would conduct tidiness inspections of the plant. Just in advance, the workers would prepare his way by quickly cleaning up.

Douglas (1978, p. 2) argued that dirt is in the eye of the beholder, as it appeared to be with Juravich's (1985) manager whom I referred to previously. Douglas saw dirt's principal social effect as being to offend against the sense of order. Its role in a society is at two levels, instrumental and expressive. By instrumental, she meant that to identify 'dirt' is to use it as a means of influencing others' behaviour. Thus, when the Refinery Manager made a housekeeping rule and went looking for untidiness, he was exercising his authority to his advantage because he could always find some untidiness or dirt. Secondly, it allowed him to become an 'expert' in safety because he was the authority on untidiness and dirt, while not an authority in the technical aspects of managing safety.

Complementing on Douglas' instrumental level is the expressive level. Writing as an anthropologist, she argued: "At this level, the laws of nature are dragged in to sanction the moral code: this kind of disease is caused by adultery, that by incest, this meteorological disaster is the effect of political disloyalty, that the effect of impiety" (p. 3). At the refinery, it appeared injuries were partly caused by untidiness. This seemed accentuated by the use of the word 'housekeeping' in association with safety, with its moral overtones relating to the home and home-making. Cleanliness and tidiness at the refinery therefore gave management heightened authority to enforce compliance which may have had a negligible safety benefit but a significant disciplinary one.

Accompanying top management's keenness to enforce tidiness and the general rules of the refinery was a reluctance to enforce more complex and deeper behaviours. For example, there was no enforcement of participation in the behaviour-based safety program adopted at the refinery (discussed earlier), despite the belief that it would be a life-saver. The reason given to me for this omission was that voluntary participation would lead to more committed participation. Workers would feel an 'ownership' of BBS. I could not see why the same principle did not apply to housekeeping. Nevertheless, at the refinery, each work crew was given the opportunity of deciding itself whether it would participate or not. I heard comments such as: 'Fuck that, they can stick it. They're not going to get us doing that,' from

Kevin Rumer, summarising the response of his crew, for which he was the Safety Rep. After a year, the 'sign-up' rate for BBS was only about 30 per cent.

This voluntariness was evidence of what appeared to be a second meta-rule. This meta-rule was: there are rules relating to highly important safety matters but the degree of compliance is determined at the management level. My 18 months of research of the refinery revealed numerous examples of casualness in the safety management system. Below the level of top management, where I would have expected high efficiency in the implementation of the safety management system, I found something which was either amateurism or a form of industrial democracy. There was certainly a deal of sloppiness. An example was a senior manager who accepted that his crews' safety meetings might not be held according to the rules and may not even be held at all. 'We expect each crew to have regular safety meetings, perhaps once a month. Some crews do it every quarter – documented safety meeting processes using standardised formats. I wouldn't say we're squeaky clean in terms of everybody doing it the same but that's certainly the aim.'[48] I also observed a widespread awareness that a significant proportion of workers did not complete their annual compulsory refresher training program through lack of management oversight and enforcement.

There appeared to be no *blitz* on compliance by managers of the organisation's rules or instructions, even though this might have contributed to a better-run safety management system. A review of the occupational safety and health legislation carried out at the time of my research made a comment on how managers can be made to comply:

> A literature review undertaken by WorkSafe, in respect of penalties, referred to NOHSC [National Occupational Health and Safety Commission] research that sought to establish the most important motivators of behavioural change for senior executive staff. It concluded that offences that provided for personal liability reinforced by credible enforcement are the most significant motivators of senior staff (Laing, 2002, p. 121).

At the refinery, there was even disagreement about the Orco doctrine of safety being at the top of the hierarchy of safety rules; and about the possibility of

[48] Interview with Joshua Black 12 March 2002.

achieving 'zero injuries'.[49] Out of this doctrine came the highest safety rule of the plant, that safety should not be sacrificed for production. This rule was presented strongly and constantly to all workers. The company's research showed that virtually all the refinery's workers understood that zero injuries was Orco's policy.[50] I saw the message *Unsafe? Don't Do It* on signs, stickers, documents and hard hats throughout the refinery. Yet, many had difficulty in making meaning of the company's doctrine of zero injuries. One Refinery Manager suggested that the doctrine was not strictly true:

> Right now if an individual walks in through that gate, does everything to the safety standards and is very careful and follows all the procedures, then ninety-nine point nine percent of the time he will be able to walk back out in the exact same condition he walked in.
>
> You can't get the point one per cent, where that individual happens to be in the wrong place at the wrong time. Except for that very small percentage which we really can't control – really an act of God – there should never be a trade-off between production and costs, and safety.[51]

Most workers believed the same thing, except that they put their chances of being injured by uncontrolled events as much higher than 0.1 per cent. In my crew, Fred Jamieson's opinion was typical of many I heard:

> Sometimes I think it's rammed down your throat so much that you don't listen any more. You automatically switch off. You get tired of hearing the same old thing all the time. I know it's said so you don't do the wrong thing and get hurt, but they don't seem to realise that accidents still happen and that's why they're called accidents. They don't accept that. That annoys me. No matter how safe you're going to be, unless you stay in here [the crib room] you will eventually get hurt out there.[52]

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[49] The company aims to achieve a 'zero-injury workforce'. In fact, this policy is for zero injuries at work *and* away from work. According to the policy, Orco workers should not 'switch off' their safety attitudes and behaviour when they leave the plant and on again when they arrive for the next shift. However, whenever I heard 'zero-injury workforce' discussed at the refinery, it implied zero injuries at work. This was the shared conception of 'zero-injury workforce' applied by all the people of the refinery, except when they (rarely) talked about how the safety culture at work affected their safety attitudes and behaviour away from work.

[50] Interview with Matt Barnard 8 July 2003.

[51] Interview with Dennis Lloyd 7 February 2002.

[52] Group discussion 4 April 2002

Two levels below the Refinery Manager, a senior manager presented a different version of the company doctrine to his workers: the goal was to *strive* for zero injuries. I was informed that Gary Harnett had presented this version at an end-of-year safety meeting for his business centre staff, one of whom was Kevin Rumer. My diary reads:

> This impressed Kevin because he believed that zero was not an achievable target and couldn't be adopted, but that aiming was a very appropriate objective. 'Zero is alright if you're sitting in a manager's office but it's different down here,' he says.[53]

> They don't accept that. They want to know why you were climbing down the ladder and hit your knee.[54]

The highest rule of 'safety before production' was a frequent source of disaffection between workers and their foremen, supervisors and managers. Kevin Rumer agreed that safety was the highest priority, but barely: 'They are very focused on production and it's very close behind safety as their number one objective' [he laughs]. The workers were practised at quoting this rule back to their foremen, supervisors and managers during discussions about tasks. The workers knew that it gave them the authority to refuse to do any job on the basis that it was unsafe. However, what I invariably saw was not outright refusal by the workers, but the first claim in negotiations with their foremen or supervisors in which they appeared to trade their refusal for short-term advantages. These advantages included calling in maintenance staff to share the workload of a particular task, skipping a task (in the hope that the next shift would do it) or taking a short-cut to finish a task earlier. The 'war of the drilling machines' which I analyse in Chapter 6 was the only resolute refusal which I experienced.

Management was sensitive to the limits of rule-making and enforcement in terms of the effect on morale at the refinery. It had introduced its own alternatives (or supplements), which were described to me as very effective. Before my time at the refinery there had been a period of poor safety. In response to this, management held what it called a 'Safety Strike' consisting of managers at all levels leaving their offices and spending time in the plant talking to the workers. During my time, a

[53] Personal research diary 8 March 2002.
[54] Personal research diary 4 April 2002.

variant on this initiative was introduced called 'Safety Contacts'. All managers were required to walk round the plant and make contact with workers to discuss safety. One senior manager said:

> We have all these sorts of processes, and I put most of them in the communications bucket. They all have components of communications in them. One is our safety contacts system, where every manager, supervisor, group leader, foreman has a responsibility to carry out so many safety contacts per week. For me, it's three. I've done my week's safety contacts this morning.

I asked him whether setting a numerical requirement (such as his three contacts per week) led to the intended effects or whether it produced token efforts to get the three over and done with.

> Definitely [the former]. Today, I did the three work contacts and they weren't all that flash. I spoke to a couple of guys doing some concrete descaling. I spoke to one of the guys about what he saw as the hazards associated with using that piece of equipment. He said: 'Na, there are no hazards whatsoever'. But the other guy…went through quite a few things and we were able to have a good discussion about safety as a two-way thing.

This manager acknowledged that he had learnt something important about how rules operated, too: 'Through the process it became quite apparent that there were possibly a number of issues on night shift in the calcination area in terms of people adopting one standard during the day and a different standard during the night.' [55]

THE SAFETY PROFESSIONALS

The refinery has a small group of professional safety advisers, informally called the Safety Department, comprising a Safety and Health Supervisor and four Safety Consultants. (One of the Safety Consultants looks after the contracting companies which provide about one-third of the workers at the refinery.) The Safety Consultants title indicates that these people do not manage safety as such, because (in accord with prevailing safety management philosophies) safety is a line management responsibility. The Consultants are available to the line managers to

[55] Interview with Joshua Black 12 March 2002.

advise on safety issues. Above the Safety Department is the refinery's Manager of Environment, Safety and Health. In addition to these six positions, there are four Safety Co-ordinators, who are shop floor workers seconded for six to twelve months as non-professional specialists.

When I was at the refinery, all but one of the professional Safety Consultants were former shop floor workers and seemed to have a sound understanding of the circumstances of workers at the refinery. One of them, Steve Bush, said he had worked in all the departments during his twenty-year career on site. Another, Jock Hay, was a skilled tradesman who had migrated from New Zealand to Australia. He was very interested in safety and had put himself through a part-time tertiary course in occupational safety and health.

I held several discussions with these safety managers and Consultants about the types of rules at Orco and how they were obeyed or breached. They acknowledged that it was impossible to comply with every rule or Standard Work Instruction. Brendan Johnstone described a 'grey zone' in which workers believed they could modify the rules because of their confidence in their own skills. He said: 'It's like when driving a car. There are rules and procedures for driving but we all drive most of the time in the grey zone, just above the speed limit.'[56]

Steve Bush believed that the workers worked in a grey zone in the SWIs for their own good reasons, although he called it 'taking a short cut'. He said:

> In a lot of instances there are more positives in taking a short cut than there are negatives. Because guys believe they are not going to be injured. The positives are: they help their boss, they get the production going quicker, they finish the job and they can go and relax and sit in the crib room and do nothing, and they get a pat on the back for doing it quicker.
>
> Also, the system [of work] sometimes requires a physical effort. To isolate and tag-out a fairly substantial vessel would mean that people would need to climb a lot of stairs to various places. In certain circumstances people will take short-cuts by saying to themselves: 'I know that valve is closed so I'm not going to climb a lot of stairs.'[57]

[56] Interview with Brendan Johnstone 25 October 2001.
[57] Interview with Steve Bush 12 December 2001.

I found no one who believed that ignorance of the correct procedure or rules was the cause of safety failure. Brendan Johnstone said: 'Our biggest problem is not people not knowing, but people taking a gamble.' In fact, the company's comprehensive training system for new crew workers, which was mostly on-the-job, lasted all of two to three years initially, followed by refresher training and assessment.

The instruction in the knowledge of the refinery started with the initial full-day general induction presented by Safety Consultants. I attended one of these inductions at the start of my research and another one a year later. Both times, I was impressed with the unwavering commitment with which the consultants made their presentations. There were about 30 inductees and we were taught the basic rules of personal conduct in the refinery. The presenters hammered home our obligation to comply fully with rules.[58] These inductions appeared to satisfy the three essential conditions which Leplat identified for the successful implementation of safety rules: their acceptability, relevance and accessibility (Leplat, 1998, p. 200). The presenters explained why the rules were necessary (to achieve our acceptance), the context of the rules (to emphasise their relevance) and the documentation of the rules (to achieve reasonable accessibility). Nevertheless, I began to see that some of the behaviour which these Safety Consultants taught us demanded complete obedience to the rules, hardly a practical notion for workers when they started their jobs.

> For example, there is long discussion about emergency showers and how, if someone finds that an emergency shower is not working, the person should not start the job. I detect a suspicion among other inductees that this is not how it really happens at the refinery. The induction is in danger of establishing two realities (that which is taught and that which is experienced), and that inductees may realise this when they go on site and discover that real life at Orco is different from what they were taught at induction.[59]

Lawton (1998), in her study of rule violation by railway shunters, found that compliance could be achieved through three managerial routes: the knowledge route,

[58] However, at one of my general inductions, there was a somewhat bizarre highlight, a demonstration by a company nurse of the effect of caustic liquor on a worker's eye. For her demonstration the nurse used a real cow's eye obtained from an abattoir. When she sprayed caustic onto the eye, it turned putrid, and some of us inductees turned green. I came away from the day believing in the company's interest in my safety, and certainly the nurse's desire to avoid having to treat such injuries.
[59] Personal research diary 27 November 2001.

the situational factors route and the attitudinal route. It seemed to me that the Safety Department at the refinery aimed to achieve good knowledge of the rules, beginning with the induction. Problems with the situation factors route – referring to organisational support for compliance (e.g. equipment and working conditions) – were to make themselves apparent as my research proceeded. Lawton explained: "Managers need to be aware of the effect of working conditions on individuals attempting to do their job according to the rules" (p. 93). Problems with the attitudinal route were also to make themselves apparent. In this context, Lawton argued that the end-use of the rules should be a prime consideration in their framing and introduction. "Rules that are introduced without reference to the end users, that are trivial or out of date, perceptions of unfair enforcement or managers who are not committed to safety all influence the attitudes of the staff" (p. 93).

If the workers at the refinery tended to break or bend the rules because of these problems, what did the safety professionals think about sanctions? Steve Bush believed there had been too few:

> Is the organisation too lenient? Historically, the company has always chosen the soft option. Always. I've been here 22 years and, except for illegal activities, I am not aware of anyone being dismissed because of choosing not to follow the right procedures.

In a discussion about a worker who repeatedly breached a safety rule for working at height without protection, he said:

> Why did he keep making the breaches? I can't get my head around that, but the only reason I can give is that traditionally there have been no negative consequences. 'Why do I have to change?' he says to himself.

> Only lately have there been some very negative consequences. So people are starting to sit up and take notice. [Management] is looking at dismissing people for continual breaches.[60]

This view, that management had been too soft, was most strongly held among the safety professionals like Steve, although I encountered it in a milder form elsewhere. My impression was that the safety professionals felt that their efforts to

[60] Interview with Steve Bush 21 December 2001.

improve the behaviour of workers were not supported by management who ducked enforcement issues. The Safety Consultant who worked with the contractor companies was the most unhappy. He believed that his people were discriminated against in the way the company used its sanctions. He said: 'Contractors get it harder than company employees. Contractors always have the threat [of dismissal] hanging above them and management uses that as a tool. The blue overalls [the company's own employees] do what they want to do.'[61]

At a time when the refinery's safety professionals were increasingly favouring compliance with rules as the route to greater safety, the government's review of occupational safety seemed to be advocating the opposite. The author of the review drew on the military paradigm in arguing:

> The military now recognises that leadership gives better results than mere command. All elite military facilities have learned to place great emphasis on the individual's capacity to contribute to the team effort and to develop individuals accordingly. It seems doubtful that the same understanding has permeated some industry which remains pre-occupied with control because of concern that individuals with 'too much' authority might be too great a risk. Australia's somewhat turbulent industrial relations history probably only adds to that reluctance to permit employees much latitude (Laing, 2002, p. 210 (footnote))

THE FOREMEN AND SUPERVISORS

Even foremen break rules, but their reasons for doing so appeared to me to be more related to keeping up production than lack of knowledge or attitudinal factors. Sometimes their leadership role meant doing something which they were not prepared to ask their crew to do. Here is an example from my diary:

> I speak to the foreman Chris Jones: He is not happy. There are problems tonight which have severely reduced production. 'Production' is a term loaded with meaning here. The loss of production triggers responsive action right through the business centre. Chris refers to an A3-size form on the wall which describes the actions which must be taken as a consequence of a major loss of production. Chris indicates wryly that previously, there was no such chart, and they were 'permitted to think for themselves' in such an event.

[61] Interview with Roy Levinson 18 January 2001.

> One of the required actions is to phone the supervisor at home and keep him informed of the bad news. Unfortunately, this is the second consecutive night when there has been a problem – last night he says he waited till 6am to phone Mark at home.

> The production problem tonight is the result of an event in [Building] 30B which filled the area with caustic liquor to the top of the concrete bunds. The problem was fixed when fitters came in and replaced a valve but then Chris had to operate the valve. He explains that he could not ask the crew to do this because of the condition of the area, with so much caustic liquor on the ground. He fixed it himself in a way which he described as perfectly safe but not conventional or by the book. He took a wheeled platform there and placed it into the liquor and stood on that to open the valve. During this, he cut his forearm as well. He says it would be too embarrassing to report this (if the crew found out). 'It is only a scratch,' he says.[62]

I found it surprising that another foreman also injured himself during the time I was with my crew; and the second time it was more serious.[63]

Being at the first level of supervision puts foremen in a challenged position in relation to the rules. Their crews tend to develop their own set of informal rules which make working life easier and often get the job done quicker, as I explain shortly. However, foremen cannot condone informal rules, whatever their beneficial effect. Lawton (1998) found that: "The supervisor, being close to the work group, may share the norms of the group and therefore support such infringements." (p. 91). At their level in the management hierarchy of the refinery, I found that the foremen had to live on their wits while bridging the divide between the formal rules of the refinery and the combination of formal and informal rules observed by their crews. The reason, I concluded, was that the crew members were not without their own authority. As I have already noted, I saw few examples of major rebellion against formal rules, rather I saw a process in which the rules were reshaped into a workable state using the informal authority of the workers. Harris (1987) discovered very much the same thing in her study of the Riverside chemical fertiliser works in the UK. From this she rejected the model of control and resistance proposed by previous researchers (including one who had studied the very same works) in which: "anything less than prompt compliance with the wishes of those senior in the

[62] Personal research diary 4 April 2002.
[63] The second incident is described in Chapter 5.

hierarchy must be evidence of some deeply hostile resistance to the whole concept of managerial authority" (p. 205). Harris argued instead: "As a normal part of the relations of production, and not just to head off hostile behaviour, the people with formal authority engage in complex transactions with those below them. Because these shop floor workers are not powerless, these transactions are not one-sided, although not evenly balanced either" (p. 206).

The model she proposed seemed congruent with my observations of what occurred at the Orco refinery. "This model is essentially transactional, and argues that the *normal* [Harris's emphasis] conditions for exacting obedience to instructions are different; they depend on negotiations between the people concerned" (p. 206).

On more than one occasion, I saw how these transactions required foremen to shift their hierarchical alignment from their supervisors to their workers, so that the rules were restated in terms which favoured the crew members. For example, when reminding his crew to make sure they stopped at stop signs, a foreman once gave the reason as: 'Because they're looking out for that' rather than 'Because it's safer'.

There seemed to be a further important outcome from the rule transactions which occurred between crews and foremen: there was little room for foremen to use favouritism for control purposes. As Jackall (1978) noted, a foreman can often selectively use rules within his/her group of workers to achieve greater power over the whole group – giving easier tasks to those who show compliance, for example. Jackall argued:

> The subjective application of impersonal bureaucratic rules is one way for authorities to claim control over their own work situations. In practical terms, and from the workers' perspective, favoritism means that the people who establish the best personal relationships with superiors are the most likely to benefit from superiors' subjective application of rules (p. 126).

However, there was less scope for this to occur at the refinery because the crews determined much of their work practices among themselves and independently of the foremen. (Also, the easy and hard tasks were equally shared out on a rota basis, thus removing the principal source of favouritism.)

My crew's supervisor, Mark Dawson, told me he found it hard to manage this particular group, which he described as 'anti-management'. This was revealing in

view of his having just completed a Master's degree majoring in organisational behaviour and occupational safety. He said of the Southend 1 crews under him : 'I see the whole group as a culture, and unfortunately it is not a good one. People unnecessarily put themselves at risk because they want the job easy and they want to go off in the crib room and take it easy.'[64] Mark believed that the company had been too lenient towards non-compliance. 'In the past, it would just go on and on, and nothing would get done. Eventually they'd [managers] relent, and we'd get the same injuries every year.' Mark was now trying to engage his crews jointly in solving safety problems, but was frustrated at what he saw as a refusal of the shop floor workers to participate.

> What we are trying to get through to these guys is they don't have to [work unsafely]. But that's not to say just sit there and say 'You've told us not to do it so we're not doing the job'. We need them to work through it – Safety Reps, foremen, the blokes – to try to find a better method. If they think we're going to wait long enough until we allow them to go back to the old ways, we're not going to.[65]

For the moment, however, he considered that the crews were reluctant to address hazards much of the time because they knew it would mean more work.

Managers (including foremen and supervisors) are paid more than shop floor workers not just because they have superior qualifications or experience but also because their role of command and control of human and material resources is considered to be more difficult. To achieve better safety requires managers to successfully perform this role. As Littler and Salaman (1985) pointed out, various approaches to management have always fallen short of perfection because of: "the inherent instability of any particular management strategy as an effort to resolve the basic tension between the need for control and the need for participation as played out against a backdrop of competitive market pressures, technological developments and management/worker (i.e. class) relations" (p. 96).

[64] Interview with Mark Dawson 6 February 2002.
[65] Interview with Mark Dawson 6 February 2002.

THE WORKERS

An organisation's rules provide its ordinary members with a means: "of coping with individual and organizational uncertainty; of developing ways of reading and clarifying a range or organizational situations; and of providing leadership and direction within organizations" (A. J. Mills & Murgatroyd, 1991, p. 30)

As I have discussed above, the formal rules are acted upon by internal forces within the organisation to produce a new set of rules composed of both the original formal and new informal ones. Even the rule-makers make informal rules which affect their formal ones. Scott-Morgan (1994) described the process:

> All the various written rules, together with the behavior and actions of top management, send signals into the body of the organization. But then various factors go to work on the signals…until the original management actions and written rules have a complete set of parallel unwritten rules that actually drive people's day-to-day behavior (p. 22).

Scott-Morgan argued that all the factors that transform the original signals are – for practical purposes – beyond anyone's immediate control.

For the workers at the refinery, this complex process, combined with the transactional negotiation of their informal rules with their foremen, brings a considerable degree of personal or group determination to their work tasks. Each task has an SWI which describes how it should be done. I noticed that, up to a point, the workers all seemed to comply with these basic work rules– but beyond this point they made a judgment about their own safety and convenience. An operator, Bill Munro, said:

> Basically the procedures are followed by everybody. For example, changing a pump you know that you open a certain valve before you open another one. A suction valve before a discharge valve on a blow-off pump. To go against those procedures would be putting yourself in danger.[66]

The availability of these SWIs and the workers' knowledge of their contents was therefore vital for the safe performance of every task. Some of the workers felt

[66] Interview with Bill Munro 9 January 2002.

the SWIs (which were accompanied by training manuals) were solid and proven documents. Bill Munro, who was one of these pro-SWI workers, continued: 'Those procedures have been more or less developed over the years. So if there is a flaw which is picked up, naturally it will be pointed out and corrected. I think that procedures are pretty well spot on now.' However, another of the crew, Luca Rossetti, told me that the training manual for his SWIs, which he had been given when he became a process cleaner, was '20 years old' and the tasks it described were only a very few of the 100-odd which he was actually required to perform. This comment points up one of the failures of rule-based systems identified by Leplat (1998) who argued: "There are cases where it is not possible to establish rules because all the possible events cannot be enumerated or even identified in advance" (p. 200).

Thus, even when there is an attempt to fully document tasks, there are grey zones in which workers can make variations. Sometimes the variation is determined by the individual worker working alone. Sometimes the variation is a pattern of behaviour determined by the crew, and perhaps long-established. An example of one such variation was the opening of 'screen boxes' through which caustic liquor passes. As described previously, a screen box traps solid impurities in a mesh basket and is rather like an appendix or filter in the pipework. Bill Munro described what happens in the case of screen boxes associated with 'blow-off pumps':

> Maybe there are certain practices where you don't have to adhere to the written-down procedure. I can give you an instance. Take a blow-off pump again. Say the procedure says that the drain must be fully drained before you open the screen box. That's not necessarily so because even though the drain gives you an indication that the screen box is empty, the screen box isn't actually empty at all. We know from experience that we can open that screen box and there will still be liquid in there.[67]

I asked him whether the departure from the written-down procedure had caused accidents. 'No, not in my case. There haven't been instances where not following the procedures to the letter has caught me out. There must have been instances of this nature because obviously we wouldn't have accidents otherwise.'[68]

[67] Interview with Bill Munro 9 January 2002.
[68] Interview with Bill Munro 9 January 2002.

This last comment suggested that he believed accidents were caused by ignoring procedures.

The example of screen boxes associated with the blow-off pumps had two consequences. The first was that the operators knew that the documented rule was wrong, in that the machinery did not operate as described. The second was that the operators were exposed to an undocumented hazard and had developed their own informal rule for the task. Their informal rule was to open the screen boxes from a place where they judged they would not be sprayed with liquor which might gush out. The existence of an informal rule presented little problem for the workers, but some problem for management. Management frowned on such non-standard practices but could not eliminate all the situations which caused them. Despite both managers and workers giving me examples of the company spending a great deal of money to 'engineer away' some of these hazards, the refinery could not afford the cost of eliminating every one.

Thus, what appeared to supervisors and managers as rule-violations for the convenience of the workers had deeper origins in the complex human and engineering factors of the refinery. This confirmed that Lawton's (1998) attitudinal route was not the only one leading to breaches. The situational factors route and knowledge route were also responsible.

* * *

I found that the existence of informal rules could sweep away some valuable formal rules. The company had a safety procedure called *Wait 1*. While not amounting to a documented task rule, it was a *modus operandi* which the workers were encouraged to use for everything they did: to take a minute to think about a task before embarking on it. There are periodical campaigns reminding workers to *Wait 1*. My crew members were frequently required to perform tasks which were hazardous for manual handling reasons because the machinery was old and poorly engineered. Having to make do with what they believed was a bad situation seemed to induce a disregard for *Wait 1*. Here was one example I observed:

> We stop to do a valve opening in a place which is quite awkward to reach. Greg White does it and then comments on how it should be

> engineered better. I then ask them if they did a Wait 1 on it, but the answer is 'no'.[69]

Sometimes the workers left clear evidence of rules being broken:

> The operator Bill Munro shows me the most hazardous building he deals with because of the process heat and the pressures. He shows me how the six production units have been built one after the other and how this has meant that they have become increasingly cramped. He mentions that there is an instruction not to climb on pipework but shows a place where it is impossible to reach a small ladder without climbing on pipes – and there is a bootprint on the pipes to prove this happens.
>
> He explains that, in places such as this building, it is his knowledge of what is safe and what is not that guides him, and that other people might make different decisions about whether to proceed with a task or not.[70]

Sometimes, the whole crew set their own informal rules from which can develop a climate of risk-taking:

> Rhys Williams talks of a crew in the maintenance business centre in eyebrow-raising terms. They are apparently 'beyond help' in their attitude to safety. He uses his hands to demonstrate how they go right up to the edge of the precipice of safety, and he assures me that one day they will go over the edge. In fact, two or three of them had an accident a few nights ago by being sprayed by caustic. They were apparently opening up a blank end of pipework in which there was still some liquid remaining. When they loosened the last bolt, the liquid sprayed out.[71]

As Safety Co-ordinator in his business centre, it was Rhys's job to conduct the accident investigation. At first he described the cause as a 'dumb and careless' approach to the task:

> At this stage of the discussion, he introduces a new interpretation of the cause, the haste or was it keenness of the workers to get the job done, which meant that they weren't prepared 'to sit down and have a cigarette' while the liquor finished draining out. Haste or keenness, he states, was a result of being on night shift, although he couldn't

[69] Personal research diary 22 April 2002.
[70] Personal research diary 9 January 2002.
[71] Personal research diary 12 December 2002.

> understand how [night shift] changed matters. 'They couldn't go home any earlier,' he says.[72]

In contrast to this crew, another Safety Co-ordinator, Charlie Rogers, told me of an occasion when he was a member of a crew which apparently was about as unsafe as the one Rhys described. After some minor incidents and near-misses, the group was convinced that a major accident was not far away. They took it upon themselves to transform their own safety attitudes and behaviour. Charlie explained how they then surprised themselves by going six months without an accident, then a year which turned into two years, until they believed there was no reason to ever expect an accident again.

I have discussed the factors and situations which can lead to informal rules to override or modify formal rules. Why do the crews at the refinery alter the known formal rules which have been established to help them work more safely? Does it matter whether the rules belong at Leplat's poles – procedural or safety – or somewhere between? Hopkins (2000) proposed three reasons for formal rules to be modified or replaced by informal rules at the shop floor level and thus to possibly create hazards. One is if the workers want to achieve goals which the system designers did not originally intend (p. 44). The use by refinery Operators of a variety of 'home-made' tools seemed to fit this description. A second reason is to accommodate a situation when some abnormality has become normal (p. 44). This seemed to occur in the Southend control room where the constant sounding of alarms was treated as normal events. The third is when workers need informal rules to get their tasks done because they encounter situations which are not envisaged by the system designers or the formal rule developers (p. 46). The variation of the rule for screen box changes, described by Bill Munro earlier, seemed to fit this description.

Some shop floor people suggested the creating of informal rules was to do with necessity, perceptions of low risk or a psychological need to break rules and achieve recognition by their peers. Kusterer (1978) found that a form of necessary violation applied in the UK chemical plant he studied. He explained how operators had developed methods of cleaning some critical parts of their machinery while the machinery was still running. Their methods were directly contrary to safety regulations, and some were plain dangerous, as the operators admitted to him. "Many

[72] Personal research diary 12 December 2002.

operators clean their own, however, reasoning that by the time they stop the machine and wait for the [maintenance staff], other problems might develop" (p. 53)

Kriegler (1980) worked at a steel works and shipyards of the BHP company in South Australia. This was in the late 1970s and he described a far tougher industrial relations environment than I found at the refinery. In his ethnographic research among the workers, he attributed non-compliance with rules to necessity. Without it, the job could not be done, he argued:

> In theory, the Company's attitude to safety seemed quite reasonable but on starting work I quickly discovered a flagrant disregard of the safety regulations by everyone, including supervisors. The regulations state, for instance, that workmen must keep clear of all suspended loads, yet this is virtually impossible, for on the slipways alone, there are eight cranes on rails and numerous mobile cranes constantly lifting steel materials and large prefabricated units, which can weight up to 70 tonnes. The 900 or so men who work in this confined space would get very little work done if they stood clear of every suspended load that passed over them (p. 36).

At the refinery, I also found that crews abandoned the formal task rules because of what they perceived to be necessity. While I was with my crew, Fred Jamieson had an accident borne of necessity. My diary reads:

> He is using a chip box hoist. Chip boxes are gratings placed under liquid discharge points below the grinding mills. They collect the stray items such as pieces of wood and foreign rock. Operators lift the chip boxes into special wheel barrows with a chip box hoist. The hoist he is using today is a manual one which is not the usual hydraulic hoist for this job. The hydraulic hoist broke down about a month ago and a temporary replacement motor was fitted immediately with the promise by the fitters that the correct replacement would be fitted the following Monday. None has ever been fitted. The problem is that the hoist now travels so slowly that it's impractical to use.
>
> The manual hoist has a block and chain movement. Although looking innocent and simple enough to use, the chain gives him a painful crack in the 'nuts' when it flicks up. There is immediate drama. Fred meets up with George Christo and Mark and unloads on them his opinion of the incident. In his usual 'in your face' way, Fred confronts Mark about the safety of the hoist until he forces Mark formally to ban the manual hoist. George and Fred respond by having a major

> whinge that it will now impossible to do the job. Eventually, Mark instructs him to complete an IFE[73] under threat of disciplinary action.
>
> Fred, George and I go off to a computer to do the IFE and fool around for at least half an hour while we find ways of expressing the incident in words which will be acceptable, knowing that half the plant will be reading it within hours. This incident is funny enough to carry the group through to the end of the day. However, the serious side is that the causal factor, the partial failure of the hydraulic hoist, has not been resolved. The instruction is now to revert to using the hydraulic hoist but it turns out to be so slow and sporadic in action that it is virtually useless.
>
> Later in the week, I find Fred again using the manual hoist.[74]

There were examples of what some workers described to me as a 'psychological need' to break rules. Outside the maintenance department, I once saw a worker at work wearing a baseball cap instead of a hard hat, and no eye protection. Rhys Williams explained that this fellow was impossible to convince of 'anything'. The worker would say 'yes' and go off and do the opposite thing. There were other examples of direct breaches of safety rules which might be interpreted as wilful. Ralph Anderson remarked to me:

> We still have people walking round the refinery with inadequate footwear. The company provides the boots and replaces them, no questions asked. But we still get cases of people burning their feet because they allow their boots to deteriorate.[75]

Overwhelmingly, however, I found that the workers developed their own informal rules for reasons that had nothing to do with wilfulness. They constructed their own task procedures out of long practice of the tasks. They made their own determination of the hierarchies of hazard they faced. They assessed that their system of informal rules and risk judgment was in harmony with the company's broad aims of being profitable and safe which were frequently communicated to them. As early as the Hawthorne studies, it has been shown that the informal rules of workers produce quite satisfactory outcomes, sometimes better ones than management might envisage (A. J. Mills & Murgatroyd, 1991; Roethlisberger *et al.*, 1939; Schwartzman,

[73] Injury-Free Event report, the lowest category of reportable safety incident at the refinery.
[74] Personal research diary 2 April 2002.
[75] Interview with Ralph Anderson 25 October 2002.

1993; Trahair, 1985). I found that the workers of the refinery generally took very seriously the overwhelming majority of safety rules and the procedural rules (like the SWIs). The informality of their rule system lay not so much in their rejection of these official rules in acts of what Trahair (1985, p. 61) argued was vicarious gratification of various socio-emotional needs. Effectively, they varied the rules in situations where the official rules were (in their view) unworkable or could be improved upon. That is why the worker's baseball cap made such an impression on me, because he stood out as so different from his co-workers, in being a deliberate and rare flouter of a well-founded rule.

However, even when I was given some examples of direct rebellion, there was reason to see a degree of logic. One example was to do with the wearing of eye protection goggles, generally referred to as mono-goggles at the refinery. These goggles had an elastic strap which once was held in place around the rim of a hard hat with a special plastic clip. However, about five years before my arrival, the company concluded that the goggles should not be clipped to the hard hat because, in the event of a worker's hard hat falling off, the goggles would go with it. I saw the occasional worker still with the clip in use. A Safety Consultant told me:

> I've actually witnessed superintendents who have walked up to an employee and said 'put your mono-goggles on correctly' and the employee has turned around and said 'get out of my face' (and he hasn't said it nicely as this), 'I've got my goggles on and I don't have to listen to you telling me how to wear them. The rules says I've got to wear mono-goggles, it doesn't say how.' And that is the attitude.[76]

This worker, and almost all others, felt that their non-compliance with rules did not increase the risks of their work. I am sure there might have been examples of this happening, but I observed that workmates influenced each other to remain as safe as if they did comply with the refinery's rules. I did not find a situation in which workers intentionally endangered themselves to achieve, for example, higher status or greater group control, as described by a steelworker who worked on the New York World Trade Centre. "One way to get respect is to do the job right….One way of doing the job right is to take risks" (Whitehead, 2001). Rather, the Orco workplace was a situation in which the workers engaged in what Raeithel (1996) called 'socially

[76] Interview with Roy Levinson 18 January 2002.

distributed decision-making'. Crews drew from their own experience of tasks and from that of their workmates to modify the procedural and safety rules of the refinery. Although the resulting new set of rules defies formulation in the terms which the organisation would recognise, it is likely to be motivated by the same outcome – in this case, safe and efficient solutions to problems presented by the machinery of the refinery. Raeithel described the process: "By constant exchange and trial application of their local insights and operative improvements by means of dialogue, [the workers] arrive at a global and cooperative work style which, to some extent, is represented semiotically in group-specific 'shared knowledge' " (p. 329). This method of rule formulation may arise from the need for the workers to achieve enjoyment or fulfilment in their work, or to overcome unworkable or impractical rules created by their management. Their desired result may not be the same as management's and could change from day to day and situation to situation.

The crib room was an ideal venue for such rule-formulating exchanges, being virtually private and exclusive to the crews. In between the banter, yarn-spinning and chatter, there was no end of discussion about the tasks to be done, how they were to be shared and the hazards to be encountered. In writing about 'life at the bottom' of organisations, Kanter and Stein (1979) argued that all informal arrangements such as these are about making it "possible for people to survive their work in the long run, to remain human and therefore, in fact, to have the energy to continue to come to work year after year – and to contribute to their families and society" (p. 183).

In this light, the workers' non-compliance with the organisation's formal rules for their work tasks was a form of group compliance with alternative ones. These alternative rules were obvious and clear in the minds of the shop floor workers; and so was management's acceptance of them. The length of duration of these informal rules gave them validity, as did the absence of challenge by those in authority. For the workers, the transaction was completed.

SANCTIONS AND REWARDS

In line with its new tougher approach to compliance with its rules, management of the refinery began to apply sanctions more strenuously during my

time there, while continuing to reward the good safety performance of the refinery as a whole.

The rewards were comparatively infrequent. In good years, when the refinery achieves satisfactory production and safety levels, all Orco employees there receive a monetary bonus of several hundred dollars. On the first day I worked a shift with my crew, there was an additional, unexpected bonus:

> Today, everyone receives a letter from Dennis Lloyd congratulating them on an excellent safety performance in 2001. At the foot of each letter is a form for each to sign to receive a BBQ hamper back-pack. All the crew members go off to fetch theirs back to the crib room where they unpack its contents, which are of high quality. All seem pleased with the gift and there are no back-hand comments, for a change. Fred collects the pack for the absent Darren and substitutes plastic cutlery and foam cups in the pack as a practical joke.[77]

Afterwards, Dennis Lloyd asked me how my crew responded to the gift. In view of the disrespectful jibes which the crew mostly directed at management, I was able to truthfully report to him that they were genuinely appreciative.

The refinery also has a scheme of safety incentives which operate under the banner of SMAC. The scheme is in three forms. The first form is an award of $1 for an employee who is sighted 'doing the right thing'. It is awarded by Safety Reps, Supervisors and SMAC team members. In fact, the money goes to charity, several hundred 'SMAC dollars' each year.

The second form is the 'SMAC Attack Award' which recognises individuals and crews who make a significant contribution to safety through an initiative or idea. The person or crew are invited for morning tea with their business centre manager or supervisor, and receive a certificate signed by the Refinery Manager. Often this award is presented without warning as a surprise.

The third form is the 'SMAC Helper Award' which recognises individuals or groups for a sustained effort in promoting or improving safety. The prize is the same as the second form. Awards earned in the last two forms of this scheme are promoted through stories in the refinery staff newsletter and information for toolbox meetings. During all my time at the refinery, I did not personally encounter any individual or

[77] Personal research diary 1 April 2002.

crew receiving any of the incentives. Nevertheless, the scheme was well known by the workers.

The available sanctions ranged from counselling by a supervisor or manager, through to 'reports' which were annotations on the employment record, stand-downs without pay and dismissals. In view of what I wrote previously about the transactional nature of authority at the shop floor level of the organisation, I was interested to see examples of what I took to be management's preparedness to engage in transactions in the administration of its own sanctions. For example, in Southend, there were instances of aborted discipline. On one night shift, my crew were discussing the issue of the drilling machines used for unblocking the heater valves which was causing so much discontent. They were offended by the Southend manager's instruction that operators using the machines must wear the designated wet weather clothing. Our Safety Representative, George Christo, was telling the crew about the latest development in the matter: a discussion with the supervisor, Mark. George said Mark had threatened another shift with being stood down because they had refused to wear the wet weather clothing. This threat amounted to a major escalation of the dispute and would have serious ramifications for Mark himself because it would be closely investigated by the senior management of the refinery. George went on to say, however, that as Mark was leaving the crib room, the crew had called him back and everyone had negotiated a resolution of the issue. I could believe that Mark would have been as much relieved as the crew members to reach this resolution, but I was surprised that a major sanction could be a matter of negotiation.[78]

I was told of a more serious sanction negotiation. Roy Levinson, the Safety Consultant who looked after the refinery's contractors, described an incident of an Orco-employed man who had twice been caught working at height outside the safety fencing and not wearing fall-protection equipment. This was an action with very serious potential consequences. The company moved to dismiss this worker but, so Roy alleged, the workforce, backed by the union, refused to allow this to happen. In this light, Roy described the company workforce as tribal. 'It's a powerful force. And that's exactly what happened with the penalty for the [company] man caught working at height without a harness. The tribe spoke. And the tribe said: "You are

[78] Personal research diary 23 April 2002.

not going to sack him." '[79] The intrusion of industrial relations into the enforcement of safety-related rules seemed to bring further uncertainty and encourage informal arrangements. Overall, I felt that the refinery's top managers were uneasy about how to make the transition from a benign and informed response to non-compliance to a disciplinary one.

If the company found it awkward to take action against people, particularly its direct employees, there was a second course of action available: to ban machines or practices. There were several important instances of banning while I was with the crew, and they all caused unrest because they made the work harder, or impossible. Sometimes, machinery or practices were banned but a replacement machine or practice was not ready to take its place; so the result was that the banned machine or practice was partially 'unbanned'. One example was 2-inch hoses which were banned after one worker accidentally turned his ankle on one when alighting from a ladder. Only 1-inch hoses were allowed from then on. Later it was found that the 2-inch hoses were necessary for particular purposes, so the ban was partially reversed, subject to the users exercising special caution. The crews saw this as simply flicking back to them the judgment about what was safe or unsafe. George Christo said of such bans: 'That's how they do it. They fly off the handle. They ban them without thinking of how many jobs need a 2-inch hose to do the work.'[80]

A second example during my time occurred with metre-high mobile work platforms which had been used at the refinery for about 20 years. These platforms were used to reach the valves at the base of liquor heaters and other elevated equipment. As part of a focus on preventing falls, there was a directive that these platforms were unsafe (because they had no handrails). Almost immediately they were collected together and broken up. A foreman told me that a design for replacement platforms was not ready for a considerable time later, despite promises that there would be one. When the new platforms did arrive, the workers described them as being so 'safe' that they were practically unusable – they would simply not fit into some of the work areas. Moreover, the workers felt they presented them with a worse hazard – the handrails round the platforms prevented the workers from jumping clear of a sudden unexpected spill of liquor.

[79] Interview with Roy Levinson 18 January 2002.
[80] Group interview 24 April 2002.

Along with what the workers felt was poor management of bans of machines or practices came their frustrations at perceived inconsistency in the treatment of known hazards. Workers interpreted management as tending to ban or rectify what it considered unsafe, but not what the workers considered unsafe. One of the most poignant incidents occurred in the most dangerous part of the refinery for my crew, when crew members were forced to work among huge quantities of hot liquor under pressure:

> Angus and Fred (with their Scots accents) take me out to watch the 'blowing of the legs' on a unit of the digesters. This process is to let off some liquor from the pipes at the bottom of the digesters so that scale can be removed from them. This is an amazing job because the drains at the base of the digesters are open box drains. The liquor spews into them from short drain pipes under the digesters. It then gushes down the box drains, spraying into the air in numerous places where the metal covers of the drains have not been kept in place. At the same time, the amount of steam quickly builds up until the operators almost become lost to sight.
>
> This night, the action of blowing the legs one at a time encounters difficulties[81] so there is a discussion in the control room between Angus and Harry, and Bert, the trainee foreman.
>
> They agree to try something extra. We all go outside to the digesters (except Dave who is off doing another routine job elsewhere). It's rare for Angus [a process controller] to be out in the thick of the work. He and George release drain valves and a huge gush of blood-red steaming liquor blasts across the floor for a distance of perhaps 15 metres. On this occasion, the liquor does not have bauxite mixed in with it and the digesters are only passing liquor. If it was a mixture, the temperature would have been probably above 150C and under great pressure. It would also contain all the junk of dissolved 'rocks', the local slang word for bauxite.
>
> Soon, everyone assembles to watch Angus juggle with one of the valves [which has an obstruction] while actually standing on the drain cover. They stand round watching and seem to be both concerned and angry that the task is the way it is.
>
> Afterwards, back in the crib room, the crew blame management for permitting the drain to be in the condition it is, so that the liquid can readily endanger them. George and Fred explain that another unit of

[81] There is a problem with one of the release valves.

> digesters has had its drain modified $2^1/_2$ years ago to be totally enclosed, virtually eliminating the hazard. Why not all the other units? George is really angry about this aspect of the episode. They all agree that it is the most dangerous thing they do. A few days later I ask the two foremen what they think and they have no explanation why the safer drains have not been extended throughout the digester building.[82]

This episode was a memorable visual experience for me, but memorable also for its effect on the crew. They were in shock from both the danger they endured and from being dramatically reminded that the company's unfathomable attitude to safety forced them to endure it. Their shock soon turned into anger against both the company and Angus (for endangering himself). What they could not understand is that such machinery had not been banned by a company which banned other harmless machinery or practices. Inconsistency of treatment such as this is one of the commonly occurring themes of alienation of shop floor workers (Burawoy, 1979). The crews I saw reacted negatively to inconsistency in how they were managed but they often disguised their reactions with gruffness and a rough and invulnerable appearance. I also saw that their supervisors and managers failed to recognise their reaction and, when they did so, tended to see it as 'touchiness' and troublesomeness. In the work setting, it was sometimes hard to discern the workers' genuine emotional responses to situations from the background of banter, invective, foul language and name-calling. And yet it was there and important.

An incident, unrelated to safety, perhaps demonstrated why the crews were reluctant to jointly solve problems. Dave Bell was 63 years old and due for retirement in a year or so's time after doing his current job as process operator for 28 years. Under the 2003 Challenge rationalisation program being planned, there were a number of positions to be eliminated. As the second oldest person in all the Southend shifts, Dave was understandably expecting to be chosen for redundancy. Redundancy would be a far better way of leaving than retirement because it would mean receiving a severance pay-out in addition to his superannuation entitlements. There would be no pay-out if he simply retired.

Dave discussed this possibility with us during several shifts, keeping us informed about his negotiations with the company. Finally, he received a letter from

[82] Personal research diary 11 April 2002.

the human resources department of the refinery informing him that he had been selected for redundancy sometime after July, which was two months away. He was instructed to reach agreement on the arrangements with his business centre manager. Dave, naturally, was delighted. He was certainly ready to hang up his 7lb hammer and steel-capped boots. He talked to me about his plans for a long visit to his family and friends in the UK in October.

Several days later, however, he came into the crib room looking dejected and mystified. He told us all he had discussed his departure date with the Southend manager, Gary Harnett, who would not let him go until the following February, ten months away. The crib room debated Dave's predicament. No one could understand how his letter had mentioned July when there was never any possibility of that. Dave told us that he had been to see the union, which 'couldn't do anything for me'.

The departure of Dave was a matter of more than workmate's interest for the others in the crew. Dave was too old to do equal work with his fellow operators and, according to Fred, hadn't 'pulled his weight for decades' – obviously an exaggeration. As Donaldson (1991) remarked, when physical strength declines with a workers' age, it is compensated for with skill. When that is not enough, "workmates must make up the difference" (p. 19). Therefore, the others in the crew were looking forward to Dave's departure, too. However, alongside this feeling was the crew members' belief that Dave's departure had been insensitively handled, and that the departure of a manager would have been looked after much more conscientiously.

* * *

If their supervisor, Mark Dawson, was right about the crew members being anti-management, it was because some of them at least saw safety rules being used for the same purpose as procedural rules. Their purpose was control, but covert rather than overt control. This operated in a way similar to the Ethicon company's commitment to communication and involvement in that safety rules became a front for a sophisticated form of worker control and had the effect of throwing back onto the workers the problems encountered by the plant (Grenier, 1988). The workers at the refinery perceived that the enforcement of rules subverted their well-developed understanding of hazards and safety at the refinery. This understanding almost amounted to a personal relationship within the plant. The workers felt they knew the

place better than the managers. In fact, they did. Mark conceded: 'I would be the fourth, or fifth, supervisor in four years.'[83] The only operational staff who knew the plant better than the workers were the foremen.

The company's new determination to enforce compliance at the refinery was showing signs of destabilising the balance between the formal rules and the informal ones. As Mark discovered, the shop floor workers were sensitive to any destabilisation of their work customs and resisted change to patterns of their working lives. 'The Orco culture is like a jelly on a plate – you shake it and there's a lot of movement at the top but none at the bottom,' is the way he described it. The experience of Dave Bell was a warning of a second destabilising event just around the corner: the rationalisation program due to take place in 2003. A year later, it was the workers who would be paying the price of this program through a significant increase in injuries. Whatever the cause, the refinery's intended progress towards zero injuries was at least momentarily reversed.

[83] Interview with Mark Dawson 6 February 2002.

CHAPTER 5:

SAFETY CULTURE

Men don't work in quiet, deserted side streets in Holloway: they work in the City or the West End, or in factories, or down mines, or in stations or airports or offices. They work in places where other people work, and they have to fight to get there, and perhaps as a consequence they do not get the feeling that real life is going on elsewhere. (Nick Hornby, *High fidelity*)

When the British sociologist Barry Turner put forward the notion of the 'industrial subculture'[84] in 1971, he wanted to draw attention to two particular features of working life in industry. The first is that the working life of its participants is a separate existence from their home and non-working lives. Turner argued that the culture of workers is just 'suspended' when they go out the gate of the plant at the end of their shift, until they return next morning. As the character in Hornby's novel suggests, real life is at work. The second feature is that the industrial subculture unites all its diversity of members and groupings who work in the industrial sphere. These members and groups participate in what he called 'one world'. "And this world, the one with which they are familiar, is not familiar to those outside the industrial sphere" (p. 5). These two features intensify the shared experience of industrial work for all its participants.

At the Orco refinery, all its members appear drawn together into a separate and intense working life, from the manager to the shop floor. They all work for a large and commanding organisation, Orco. They also work in a large and commanding plant. Its size, smell, heat and grime affect everyone in a way that working in, say, an office building does not. The working lives of the crews have a separateness and intensity exaggerated by the close mateship, the extreme conditions,

[84] He used the term 'subculture' to differentiate it from the national culture, whereas the term is used in this thesis for the cultures of the individual groups within an organisation such as the shop floor crews at the refinery.

and the ever-present danger. Within this ‘one world’, however, the crews have a style that sets them apart from other groups like engineers, office staff and senior managers. These other groups called this style the ‘shop floor culture’ and I saw that it was under attack.

* * *

“These days it seems increasingly difficult to get away from ‘culture’,” Du Gay (1996) commented. “Thus, even in the most ‘material’ of domains – that of business and organisation – programmes of reform have come to be defined in cultural terms” (p. 41). So it was at the refinery: reform was a cultural experience.

The study of culture, originally the province of anthropology and sociology, has now expanded into many other domains. In the material domain of the workplace, much of the study of culture is from the management/business perspective (Aungles & Parker, 1992, p. 68; Schwartzman, 1993, p. 33). Writers in management understandably see culture as a means for achieving greater human efficiency and effectiveness in enterprises. Beginning with the management ‘gurus’ of the 1980s such as Peters and Waterman (1982), there has developed a belief that excellence can be achieved by creating a unitary and powerful culture within an organisation. Culture is therefore the focus and the force for change and reform when viewed from this perspective.

However, as Scott-Morgan (1994) remarked, because the concept of culture originated in the academic field of anthropology, it does not follow that the concept can successfully be transformed for this new usage. The purpose of describing a culture was “typically as a baseline for preserving it – never with the intent to change it” (p. 15). I argue, therefore, that attempts to change the culture of the shop floor are certain to fall short of expectations, or alternatively they require many years to achieve (Harvey, Bolam & Gregory, 1999), because the working culture is stronger than any immediate force which can be applied to alter it. It is instead through the culture of the shop floor that change can best be achieved, thereby realising outcomes which organisations desire. Culture plays many roles within organisations. One is the communication of order through control. The order which culture communicates is not necessarily that of the formal sources of authority such as managers of companies. Managerial authority is mediated by the effects of the many

workplace subcultures which alter and weaken the 'corporate' culture. I argue in this chapter that management should acknowledge and accommodate the mediating effects of these subcultures if the organisation is to move towards fulfilment of its potential.

As Kunda (1992) discovered at the high-tech manufacturing company Tech, the 'engineering' of a strong corporate culture allows management to substitute traditional, rational control through the hierarchy with normative control (p. 219).[85] In this way, Tech was able to bind the hearts and minds of its employees to the corporate interest (p. 218). This engineered culture was more than the team-spirit or loyalty which were valued in corporations in previous times, and which were developed around relationships between the organisation and its people. This was something deeper. Kunda argued that to see the organisation in cultural terms recognised culture's normative depth.

> Its essence is a managerial attempt to corner the internal market on the power to define reality, to prescribe and control the expression of the members' beliefs and emotions, to enlist members as agents of control, and, ultimately, to expand that aspect of the members' selves that is determined and defined by corporate interests (p. 219).

The rise of culture as a perceived mechanism for achieving order through a focused workforce experience began with the human relations school of management developed at the Harvard Business School to which I have previously referred. In the school's Hawthorne studies, which originated as a study of the physical and environmental influences on workplace productivity (such as the brightness of lights and the humidity), researchers found themselves enquiring into social influences on productivity, rather than the structural, managerial or engineering influences (Schwartzman, 1993, p. 5). For the first time, serious consideration was given to the informal work arrangements generated by the relationships among workgroup members and with their supervisors (Aungles & Parker, 1992; Parker, 1981). Acknowledging the presence of a shop floor culture, researchers found the first evidence of what they believed was a link between workgroup norms and output, and

[85] Kunda, with Barley (1992), found what they termed 'surges' of popularity of means of control, alternating between normative and rational, during four periods of American organisational management: scientific management (1900-1923), welfare capitalism-human relations (1923-1955), systems rationalism (1955-1980) and organizational culture (1980-present).

the role played by superior-subordinate communication (Redding, 1985, p. 35).

The evolution of a cultural theory of organisation in the Western industrial nations during the 1980s required a revised view of workers from that which was derived from the Hawthorne studies. Working people were not merely seeking personal fulfilment (from within their workgroups) but were also seeking work fulfilment. Du Gay (1996) explained:

> Within the Human Relations tradition, for example, the worker is considered, first and foremost, as a social creature seeking fulfilment of his or her needs to 'belong' in the group relations of the workplace. With the contemporary 'entrepreneurial order' (Miller and O'Leary, 1989), however, the worker is represented as an individual in search of meaning in work, and wanting to achieve fulfilment through work (p. 60).

The impetus for this revision of the motivation of workers was the rise of entrepreneurism: the search for the ideal organisation documented in best-selling management books such as Peters and Waterman's *In search of excellence* (1982), and Deal and Kennedy's *Corporate cultures* (1982).

Out of this new view of the significance of workplace culture came the belief that excellent organisations get best value from their people not by manipulating group human relations to secure a sense of belonging but by appropriately channelling the need for fulfilment – fulfilment coming in the form of autonomy and creativity. Du Gay (1996) therefore described a workplace culture as "that ensemble of norms and techniques of conduct that enables the self-actualization capacities of individuals to become aligned with the goals and objectives of the organization for which they work" (p. 41). That process of alignment can be coercively, even brutally implemented. Management psychologist Edgar H. Schein said of the 1980s:

> Culture-change programs became the order of the day. And to the extent that these programs require a shared commitment to new values – as well as punishment for those who depart from them – they constitute coercive persuasion. Consider GE. Jack Welch made his goals for GE non-negotiable: If you wanted to stay at the company, you had to learn what he wanted you to learn. Heavy socialisation is back in style in American corporations, though nobody is calling it that (cited in Coutu, 2002, p. 28).

In his ethnographic study of a division of Tech, which had many of the features of GE, Kunda (1992) found the culture was indeed engineered to achieve a corporate outcome. The engineering was a kind of game played at virtually all levels of the organisation:

> The culture means not only the implicit and explicit rules that guide and shape their own behaviour and experience of work; it is also the vehicle through which they consciously try to influence the behaviour and experience of others. The 'culture', in this sense, is something to be engineered – researched, designed, developed, and maintained – in order to facilitate the accomplishment of company goals (p. 7).

Van Maanen and Barley (1985) argued that it was possible under certain circumstances for an organisation to be one homogenous culture. "Unitary organizational cultures evolve when all members of an organization face roughly the same problems, when everyone communicates with almost everyone else, and when each member adopts a common set of understandings for enacting proper and consensually approved behavior" (p. 37). At the Orco refinery, this combination of conditions did not seem to apply and in a crucial way, neither did they at Tech for Kunda (1992). Kunda described how Tech attempted to engineer a homogenous culture, but even in this situation there was a cadre of 'temporary workers' who were 'exempt' from the expectation and requirement to conform to this culture even though they worked at the company for years. Kunda labelled such people 'extra-culturals', and spent little time exploring their culture, partly because they were only 8-10 per cent of the workforce. For the Orco refinery, these people are such a large proportion of the workforce (66 per cent) and perform such a central role that they demand close scrutiny. Here too, they do not belong to the management-engineered culture, and could perhaps best be described as 'other-culturals'. It is the relationship between the people of the management-engineered culture and the other-culturals which is at the heart of this research.

INTERPRETATIONS OF WORKPLACE 'CULTURE'

There seems to be no single and accepted conceptualisation of culture in organisations. In the literature of anthropology and sociology, 'culture' has been interpreted as either a system of behaviours (a functionalist conceptualisation) or a shared system of meanings (an interpretative conceptualisation) (Pidgeon, 1991, p.

134). By ‘behaviours’ is meant the regularly occurring, organised and observable acts of social groups – and the groups can be in familial, political, religious or technological settings. By ‘shared system of shared meanings’ is meant that culture is a system of symbols, ideas, rules and thoughts in the minds of those who share it. While management writers tend to see culture as behavioural, perhaps for ease of application to the workplace setting, it is nevertheless valuable to see it as a system of meanings. It is this view which leads to the oft-stated definition of culture as ‘a collection of beliefs, norms, attitudes, rites and practices’ (Pidgeon, 1991, p. 134).

Edgren (1990) extended the interpretative conceptualisation of culture to workplaces by incorporating corporate factors. “An organization maintains boundaries, has its symbols, carries out rites and lives with its rituals. The reality that the members of the organization experience is formed by its history and the norms it has developed, but also by the organizational goals and the different ways they are achieved” (p. 173).

Representing a mid-point of the divergence between functionalist and interpretative conceptualisations, Everett (1990) suggested a coalescence of the views of culture: “Current concepts of culture in the anthropological literature suggest that viewing organizations as equivalent to cultures is inadequate as an approach to the study of organizations. The conceptual inadequacy stems from the failure to distinguish between cultural and behavioural features of organizational life” (p. 238). Everett further believed there was a convergence of the social and cultural properties within any organisation so that it was best understood in a sociocultural perspective. “Treating the organization as sociocultural system facilitates analysis of the extent and conditions of linkages between symbolic and substantive outcomes in organizations” (p. 240). Certainly, any company which took an interest in its symbolic outcomes would go some way to softening Schein’s concern about ‘heavy socialisation’ which I referred to above. From his research of corporate communication, Grunig (1993) felt that the two views of the organisational culture were inextricably bound together. He argued that excellent communication in an organisation would create a productive culture of relationships in which “the symbolic and behavioural relationships are intertwined like the strands of a rope” (p. 123).

Nevertheless, companies have generally found that the unitary functionalist conceptualisation of organisational culture has been useful in allowing them to believe that the culture can be readily subjected to change in what are now widely called ‘culture change’ programs. By titling this entity ‘culture’ rather than ‘attitudes’ or ‘climate’, top managers of these organisations seem to be expressing an intention to change something substantial and fundamental in the working lives of their employees. (Those companies which only seek to change attitudes and climate seem to be aiming for something less significant and more transitory.) Kunda (1992) observed how single-minded top management could be in analysing their cultures, and then manipulating them. The Tech plant which Kunda researched had a full-time culture custodian, Ellen Cohen. Her work, which was called ‘culture mapping’, was unemotional and relentless in the way it was carried out. The company’s management manuals spelt out the requirement which each plant had to fulfil: “Publication of two culture series papers a year, mostly filled with data found out about the Tech culture” (p. 69).

The adoption by management of any conceptualisation of culture which allows for top-down manipulation sets up conditions for misunderstanding and misapplication of communication. Harvey, Bolam and Gregory (1999) are among a number of authors on the subject of safety who warn of this danger. “Management often assumes that the belief systems held by themselves are the same as those which employees hold, just further up or down on the scale” (p. 10). They demonstrated how wrong this assumption was by researching nuclear power plants in which safety was the top priority (just as at the refinery). They found two distinct safety cultures: a management safety culture and an industrial worker safety culture. They concluded:

> Perhaps the most fundamental thing that must be said is that if managers and industrial workers are operating within different attitudinal and belief frameworks, then clearly there are potential problems for communication, safety responsibility, risk-taking behaviour and a whole host of other safety-related issues. It could be like managing people who speak a different language, have different priorities, customs and practices and who do not see things from your perspective.
>
> How then do you communicate? Well, you have to learn the language, understand where they are coming from and be able to empathise.

> Indeed, you need to be able to understand your own language, customs and so on before you can achieve this with theirs. (p. 12)

Harvey *et al.* concluded with the clear advice to learn about different cultures' beliefs, opinions, communication styles and motives. This grasp of the group norms of self and of others should be the starting point for any attempt to change a safety culture, Mandsorf (1999, p. 110) argued. The supervisor of Southend 1, Mark Dawson, talked about 'different attitudinal and belief frameworks' in these terms: 'The front-line leadership [foremen] along with the operators have tended to become a group by themselves and they'll do what they want to do when they want to regardless of whether it fits in with the objectives of the business.'[86]

SAFETY AND ORGANISATIONAL CULTURE

Occupational safety is one of Du Gay's 'programmes of reform' in the workplace domain – referred to at the start of this chapter – which have come to be defined in cultural terms. Their reform element is signified by companies' frequent use of expressions such as 'safety culture change' and 'total safety culture'. The question of whether the culture is a definable quality of an organisation (which is thus readily able to be changed) or whether it is the organisation itself, sets the tone of any discussion about the relationship between safety and workplace culture (Reason, 1997, p. 193).

While organisational researchers and safety management consultants have tried to identify the factors which comprise safety cultures, and then measure them, my research at the refinery leads me argue that the culture of the shop floor is the most embedded and therefore the least prone to be changed. Moreover, any contemplation of cultural change should start with the acknowledgment of the legitimacy of the shop floor culture and of the dangers of attempting to change it. As Beck and Woolfson (1999) argued, the notion of a workplace safety culture pre-supposes a unified system of values and ideas which has been achieved by management's beliefs and values being imposed on all others. By attempting to enforce one culture on its workforce, an organisation demeans or denies "competing and sometimes conflicting views about the nature of existing problems and their

[86] Interview with Mark Dawson 6 February 2002.

potential solutions" (p. 15). The existence of other safety cultures in a workplace provides second opinions about how to make it safer, challenging though these opinions might sometimes be. As Beck and Woolfson argued, and as I discovered at the refinery, it may in any case be futile to pursue a safety culture change program because in every culture these other cultures have the knack of resisting change. Those organisations which are committed to bringing about safety improvement through culture change must somehow factor those different cultures into the change programs. In her advice for such organisations, Louis (1985) argued: "Any efforts to change and/or manage culture…necessarily entail the isolation of distinctive cultures" (p. 78). (By 'isolation' she meant identification and understanding.) Moreover, an organisation's other cultures are produced through the same means as management's. It is just the collective understandings of each that are different. Van Mannen and Barley (1985) argued that any culture should not be considered smaller or larger, nor weaker or stronger than the management's culture, even though its membership is numerically smaller. Nor should it be considered better or worse.

Harris's (1987) discussion of her investigation of other workplace cultures illustrated the dangers and futility of converting management's culture into an organisational 'monoculture'. She was intrigued to notice that the two plants she studied had two distinct cultures even though the plants seemed otherwise identical in every significant respect. They were certainly managed and staffed in the same way. The differences in the cultures went to the heart of the operation of the plants because they represented two different sets of shop floor responses to management's uniform set of control systems.

The widespread use of the term 'safety culture' seems to have begun with comments by British and European experts on the 1986 Chernobyl nuclear plant disaster (K. J. Mearns & Flin, 1999; Pidgeon, 1991). A UK Government Minister was then quoted as saying that British nuclear plants could not suffer a similar fate because they had a superior safety culture (Pidgeon, 1991, p. 129), a remark with Cold War overtones. The concept then gained international currency during the 1990s, being loosely used to describe the corporate atmosphere or style in which safety is understood to be, and is accepted as, the top priority (Cooper, 2002).

Geller (2003) noted that the use of the terms 'culture' and 'safety culture' in organisations is now pervasive. "It seems every safety pro is talking about the

influence of corporate culture on safety-related behaviors and attitudes. And it's commonplace to entertain the need to change culture in order to effect long-term improvement in safety performance" (p. 6). Cooper (2002) remarked that some organisations in high-risk industries treat safety culture as the dominant characteristic of their corporate cultures. In other organisations, it is a 'subcomponent' of corporate culture, representing the individual, job and organisational features which affect and influence safety. In this dependent position, the safety culture is subject to major forces sweeping through the corporate culture from organisational restructurings, mergers and downsizing (p. 31).

Safety culture is thus a hot management issue in organisations; so it is important to look at how organisations view culture when they begin to manage workplace safety. In relation to safety culture, the conceptualisation favoured by managers and safety practitioners is the same 'functionalist' one used for their organisational culture. Safety culture is believed to have a predetermined function (implementing controls and policies to improve safety). In this conceptualisation, developing a safety culture is simply the deliberate manipulation of various organizational characteristics thought to affect safety, a manipulation "achieved by dividing the task into a series of subgoals (e.g. conducting risk assessments, auditing safety management systems, providing safety training) that direct people's attention and actions toward the management of safety" (Cooper, 2002, p. 33). The alternative interpretative conceptualisation sees safety culture as "an emergent property (set of values, belief and attitudes) of social groupings" (p. 32). Significantly for managers, the latter conceptualisation implies that the safety culture belongs to its members and not to the company. It demands to be understood. It cannot be itemised and probably not measured (Pitzer, 1999, p. 6).

From this, it is interesting to see how some regulatory authorities view safety culture. The International Atomic Energy Agency (cited by Cooper, 2002, p. 33), calls it: "that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance".

The Confederation of British Industry (p. 33), defines it as: "the ideas and beliefs that all members of the organization share about risk, accidents and ill

health". The British Government's chief occupational safety policy organisation, the Health and Safety Commission (p. 33), defines it as:

> The product of individual and group values, attitudes, competencies and patterns of behaviour that determine the commitment to and the style and proficiency of an organization's safety and health programs. Organizations with a positive safety culture are characterized by communications founded on mutual trust, shared perceptions of the importance of safety and confidence in the efficacy of preventive measures.

All these definitions give safety culture a normative element, so that it can therefore be good or bad (Beck & Woolfson, 1999), positive or negative (Eckenfelder, 2000) and even mature or immature (Fleming, 2001).

The two competing conceptualisations of safety culture thus carry their own consequences, because they influence what can be done with it. As remarked above, in the functionalist conceptualisation, safety culture is constructed as being in a form which can be measured and, as importantly, managed. As Reason (1997) said: "The former view emphasizes management's power to change culture through the introduction of new measures and practices, while the latter sees culture as a global property that emerges out of the values, beliefs and ideologies of the organization's entire membership" (p. 193). His colourful language then showed that he sides with the functionalists: "A safety culture is not something that springs up ready-made from the organizational equivalent of a near-death experience,[87] rather it emerges gradually from the persistent and successful application of practical and down-to-earth measures" (p. 192). What Reason did not seem to accept is that the emergency of culture from the values, beliefs and ideologies of the organisation's entire membership *does* permit a significant culture-forming role for management. The authority which management represents has an influence on the culture of the organisation. It is just that, according to the interpretive conceptualisation, its influence is mediated by what Cameron and McCollum called the 'many competing cultures' (1993, p. 220).

Attempts to identify what such a culture comprises demonstrate the practical and down-to-earth conceptualisations of a safety culture in industry. Typical is

[87] Reason does not make it clear whether he was here referring to some major accident.

Fleming's (2001) ten elements, which he distils from the British Government's Health and Safety Executive work in this area. The ten elements are (p. 3):

- Management commitment and visibility
- Communication
- Productivity versus safety
- Learning organisation
- Safety resources
- Participation
- Shared perceptions about safety
- Trust
- Industrial relations and job satisfaction
- Training

These elements seem to me to have more value for their measurability than their cultural construction, and Schein (1992) criticized this social-psychological method of researching organisations:

> The problem with this model is that it leads to more of an illusion of objectivity than actual objectivity. It feels safe to argue that culture is simply that which has been operationally defined as culture, but that approach may lead to conclusions that have very little to do with what actually goes on in organizations (p. 187).

Orco conducted what it called a 'safety culture survey' of the refinery while I was there. A selection of employees were interviewed at length (90 minutes) on their understanding of the following elements:

- Safety management systems
- Health and safety plans
- Individual accountabilities and responsibilities
- Participation in health and safety
- Health and safety rules
- Safe work procedures and instructions
- Job observation program
- Safety support structures
- Other matters

The survey was reported to have found many things wrong with the safety culture, but the refinery's top management dismissed this finding on the grounds that the survey was superficial rather than on the grounds that it measured something other than the safety culture.

* * *

While not everyone agrees with the functionalist conceptualisation or that safety culture can be changed, it is clear that safety culture can change over time. At the refinery, all those I spoke to believed that it certainly had changed there over time. The shop floor workers saw the change as having come from the efforts of both management and the workers. Top management saw it as having come from their initiative and efforts, often against the resistance of the workers. Some saw the change coming from no one's efforts, but from the culture itself. Kevin Rumer acknowledged that the 'safety values' were getting higher all the time. As well, he believed that the approach taken by individual crew members was reaching a higher standard. He gave an example of pumps that required maintenance work. First, they had to be isolated by having valves shut:

> Before, we used to be able to hand them over [to maintenance staff] to work on with just a minimal amount of liquor passing on the valve. But now, the fitters will not touch a piece of equipment unless it is completely dry, isolated on both ends, drained down with not even a dribble of liquor running through the system. That's par for the course now. Five years ago you would get away with a bit of a trickle.[88]

Bill Munro was able to go back much further in his memories of the refinery. He saw the problem as an engineering and management one as much as a worker one.

> Twenty-eight years ago, it was a lot more hazardous because we had spillages everywhere. It was really bad. Where the bauxite was mixed with the caustic there were constant spillages and they had to be hosed away. Even to this day we have things like that still happen, though not on so big a scale.[89]

As these comments illustrate, if Bill, Kevin and others had experienced a change of safety culture over the years, it involved a modification of their level of reluctance to accept the refinery's hazards to which they were exposed. Three decades previously, the operators would set off each day to work among known hazards, everyone with their own feelings about how fair this was. Today, they did the same, but at least they had the knowledge that they were less likely to be injured in circumstances which they could not control.

[88] Interview Kevin Rumer 8 March 2002.
[89] Interview Bill Munro 9 January 2002.

CHANGING THE SAFETY CULTURE TO CHANGE SAFETY

In line with the refinery's functionalist conceptualisation of its work culture and its safety culture, the managers were trying to establish what they called a 'total safety culture', which implied that all workers would embrace the notion of a 'zero-injury workforce' and would not accept exposing themselves or each other to harm. Further, this idea was that safety was a 24-hour concept that included off-duty time. Safety was not 'switched on' as an Orco worker entered the refinery – and 'switched off' when he went home. This therefore required both a state of mind and a regime of behaviour. It also required the participation of the group of workers who were most at risk: the crews. There was much work to be done if this goal was to be achieved. The refinery's Safety Culture Survey (noted above) reported: 'Safety performance across [the organisation] is not improving at an acceptable rate. [The company] has very good systems…but has a problem to implement and achieve the best from its systems'. The implication of this was that the people were failing the systems; that all levels of management were not ensuring that these well-designed processes were introduced comprehensively and administered determinedly.

One of the principal instruments for inculcating a total safety culture among the crews was the quarterly Safety Summits. These were full-day meetings held by each business centre off-site in the company's social club. They were the prime opportunity for the business centre managers to initiate cultural change via personal influence upon the people who (in turn) influenced safety practices at the shop floor level: the elected Safety and Health Representatives. When I attended one of these summits, the participants were the Southend manager, his two supervisors of Southend 1 and 2, a Safety Consultant from the Safety Department and the roughly 20 Safety Representatives of the crews. All those present were men. (The individual members of the crews and the foremen were not usually present at these summits.) The Southend manager, Gary Harnett, chaired the summit and began by promoting the total safety culture. A very able public speaker, he talked compellingly about the value of the total safety culture to which he was committed. The men listening around the room seemed at first to agree with his message and soon began to contribute supportive comments. As the audience thus grew accustomed to making contributions, some began to argue minor points of view and even to dissent from Gary's opinion – for instance, they told him about occasions when production had

been put ahead of safety, despite Gary's commitment that it should not be. As they spoke, the style of the summit changed from lecture to debate. The men were communicating *their* safety culture but as the style changed Gary seemed to become unsettled. Without being able to resolve their issues, he would shut down the discussion and go on to the next item of the agenda.[90]

At one level, this summit was participative and positive-minded. Yet I wondered how far it went in its principal objective. There was a particularly awkward moment when Gary read out the list of actions minuted from the previous summit. One-by-one, it emerged that few of the men had done what they had agreed to do. Gary was patently disappointed and the men themselves seemed to retreat to a demeanour of mild defiance. I felt the men were prepared to support the change process by attending a day's meeting away from work but not to contribute their commitment in their daily shop floor life when they had not had been able to participate equally in the decisions taken. This feeling was confirmed when the discussion returned to matters of future action and the mood recovered. However, an unexpected event was to occur which, for me, illustrated how the safety culture was lived differently by different groups in the refinery.

At the summit's morning tea break, Gary took an urgent mobile phone call about a serious accident back at the refinery. It seemed that one of his foremen had been sprayed with caustic liquor while trying to perform an emergency pump change while his men were attending a union stop-work meeting about the 2003 Challenge. This was a Category 3 incident requiring medical treatment. A discussion ensued between Gary and his two supervisors of Southend 1 and 2, the consensus being that the accident was probably the result of the foreman's unfamiliarity with the procedure. The three seemed to blame the stop-work meeting, though not in so many words. Gary explained to me that there was a procedure which prevented crews from leaving for a meeting unless all the systems were safe; and there was a procedure for handling unexpected events during such a meeting, such as this emergency pump change. Gary was concerned and annoyed, but more at the crew than at the failure of the procedures. I was struck by the gap between the talk of total safety culture at the summit and its practice a short distance away. Rather than being the fault of the crews for going to the stop-work meeting, I felt this accident was the fault of Gary

[90] Personal research diary 13 March 2002.

and his supervisors for not having a workable procedure for controlling hazards during an unusual (though not rare) occurrence. In particular, the foreman should have felt able to wait until his crew returned before the hazardous pump change procedure was performed.

Geller (2000) argued that leadership is a necessary condition for an organisation to achieve a total safety culture. "Safety management is necessary at times to motivate people to do the right things for injury prevention. But such activity is not sufficient to achieve a total safety culture. Safety managers must know when to become safety leaders and build personal responsibility rather than hold people accountable" (p. 40). (Geller was addressing safety managers, but his argument applies equally to line managers like Gary who are responsible for safety.) Gary could have taken responsibility himself for matters within his power which would contribute to a total safety culture being achieved. Yet there was a prevailing management belief in Southend that it was the shop floor workers who had to make the changes. Much later, George Christo commented forcefully to me about these safety summits: 'So much bullshit is talked there but nothing useful comes back. All the resolutions stay at the social club.'[91] Those responsible for leaving the resolutions at the social club were the shop floor Safety Reps and the managers, it seemed.

* * *

Gary and his colleagues in management believed that changing the safety climate – a manifestation of safety culture (K. Mearns *et al.*, 2003) – would reduce injuries and incidents, but it is not clear that it does. Glendon and Litherland (2001) implemented a questionnaire-based survey of the safety climate and an observation-based assessment of the level of safety of the work crews, to determine any relationship. They concluded: "Contrary to expectations, this research did not find any relationship between safety climate and safety behaviour" (p. 174). "The present results contradict the limited previous research on the relationship between safety climate and safety performance (e.g. Glennon, 1982; Lee & Harrison, 2000; D Zohar, 1980)". On the other hand, Neal, Griffin and Hart (2000) reported that the general organisational climate exerts a significant impact on safety climate, and safety climate in turn is related to compliance with safety regulations and procedures as

[91] Personal research diary 2 April 2002.

well as participation in safety-related activities within the workplace (p. 99). There remains no clear evidence relating safety culture to accidents, although the Hawthorne studies suggest that any attention to safety matters whatsoever will bring some change – the Hawthorne Effect (Whiteley, 1995).

The safety culture of the refinery crews exists in a setting of threat. Soon after my work began at the refinery, the Safety Co ordinator Rhys Williams showed me around his part of the plant. Given my newness to the setting, it made a great impression on me. It was immense, thrilling and frightening at the same time. Not only were the structures which loomed all around us large and powerful, many were caked in red mud and leaking hot liquid. Steam escaped from numerous places deep within the plant. I could not ignore a feeling of doom, made more sinister by the inhuman appearance of the workers in hard hats, goggles and stained overalls.

Then we climbed some stairs to the highest part of the plant where we visited a building used by maintenance crews. Rhys was keen to show me the results of 3D, the company's acronym for a 'housekeeping' program to tidy up work areas which was part of culture change efforts at the refinery. The rooms of the maintenance building were neat as a pin. The tools were tidily stacked and the benches were perfectly clean. I asked Rhys what he thought about 3D, and he conceded that working in such tidy surroundings with clean equipment might encourage a safer approach to the work itself, a view held by management. If this was so, I suggested, it might be just as likely that the reverse effect would also apply; that working the hazardous and forbidding surroundings of the refinery might encourage the crews to adopt a risky approach. Could the workers' perceptions of their surroundings somehow influence their behaviour? Rhys thought they could. I found no evidence that this was true or not true, but in a way that did not matter. If Rhys and others believed that tidy work areas contributed to safer behaviour, why did the company not attempt to make all work areas as tidy as possible rather than allow the persistence of the contaminated work environment which the workers had to endure?

Hirschhorn (1988) believed that the 'cultural framework' of work can have a direct affect on the safety of workers. Referring to US studies of New England power utility workers who worked for six weeks without an accident while restoring power after a disastrous storm, he said the reason for their perfect safety record, despite the hazardous circumstances, seemed clear:

> The meaning of the work, its value to others, was obvious. Accidents frequently happen when workers, anxious about the work, fail to pay attention. They withdraw from the boundary of their roles. It appears that the obvious value of the work to others enabled the utility workers to overcome their anxiety of staying at the role boundary, of paying complete and total attention to their risky and difficult task.
>
> Today, however, the meaning of our work is becoming progressively less clear. As we enter the postindustrial society, we lose the cultural framework that enables us to value work in general, that tells us when we are doing 'good' or succeeding at work (p. 231).

THE CULTURE OF THE CREWS

While the managers of the refinery were promoting a total safety culture, some crew members believed that one already existed among the workers. As a long-serving foreman, Joseph Ewers, said to me: 'We know our crews and in most cases we know their families, so we are really a big family. We deal with people's personal problems.' He believed that the real motivation for safety occurred at the shop floor level because of this crew/family relationship. Another time, I watched some vigorous banter at a crew safety meeting. The men were laughing as the Safety Rep read out the reports of the minor injuries and incidents which the group had suffered during the previous period. When I raised this with the Safety Consultant, Steve Bush, he said:

> That's human nature, guys having a go at each other. That seems fairly normal from my experience of meetings. It's easy to skylark after the event. Laughing at one another is part of the rehabilitation process. But with the serious injuries, the guys rally around and treat them with a high degree of seriousness.[92]

Aspirants to crew membership commonly share crew culture even before they are appointed. In the four decades since the refinery opened, crew vacancies have mostly been filled from among operators at other company plants nearby, or from among family, friends and acquaintances. The Southend 1 supervisor, Mark Dawson, who believed there was a 'bad' shop floor culture, said this was a bad thing: 'They are constantly back-filling with people from the other company refineries, people who have 10-15 years in the organisation. There is very little fresh blood

[92] Interview Steve Bush 12 December 2001.

coming in. That ingrains the culture we've got.'[93] Only in very recent times has the company set out to recruit more widely, or 'diversify the gene pool' as a human resources officer put it. However, the company does not seek people who are complete newcomers. This human resources officer described how vacancies were advertised only in the company's publications and noticeboards.

> We get neighbours and relatives applying. We don't go into the [general community] because we'd just get too many responses. The other people who apply are the contractors we have on site. Because they're working here they see the ads and then apply as well. So we probably get a little more diversity from there. They know what the environment's like. They know it's smelly and it's hot.[94]

Each selection process for a new crew member is facilitated by the human resources staff, but the decision about who to appoint lies principally with the foreman and a member of the crew who sits on each selection interview panel. 'Ultimately, they know more about what happens on the job and more about the dynamics of the crew,' the human resources officer said. After new crew members join, it takes at least two years for them to master their jobs, during which they learn most of what they need to know by working with their new mates.

The composition and character of the crews are thus strongly self-determined through people who Schein (1992, p. 244) called 'cultural reproducers'. It is understandable that this should be so, because the new members of the crews typically work productively and safely with their new colleagues for several years before any opportunity for crew change occurs again. The crews also have their ways of purging members whom they believe to be incompatible. My own crew demonstrated just how this is done. This event occurred after I had finished my intensive period with the crew and I heard about it six months later when I visited their crew crib room at Christmas. Immediately, I noticed things were different. Bert, a process controller, had completed his foreman training and had been promoted to the position of foreman, and had been replaced with a person from another crew. I had half-expected that the company would put Bert in charge of another crew rather than the one he had just been a member of, but here he was, in charge of his former equals. Not immediately observable was the news from Angus, the Scottish process

[93] Interview with Mark Dawson 6 February 2002.
[94] Interview with Christine Gough 22 March 2002.

controller. In a quiet moment, he took me aside and told me he had been betrayed by the crew while he had recently been on leave. They had plotted to have him transferred to another shift. He said he had got back from leave to discover that his transfer was all arranged. Angus was angry. 'Them bustards shufted me,' he said in his broad Scottish accent.

I wondered whether the culture would be much different because of this double change to the composition of the crew plus the promotion of Bert. Van Mannen and Barley (1985) argued that workgroups such as my crew have no mind of their own and that their cultures are sustained and enacted by individuals. This leads to the conclusion that the safety culture is different for each member of the group, in the same way that the organisation culture is different for each person because their beliefs attitudes and values do not absolutely align (Cooper, 2002, p. 31). The response to any situation differs from plant to plant in an organisation, and from department to department in a plant, from workgroup to workgroup, individual to individual and from moment to moment. In any place and at any time, culture is constructed and reconstructed. Individuals are able to change their workgroup cultures by their own actions. The arrival of a new member requires everyone to devise "innovative interpretations and strategies of action" (Van Maanen & Barley, 1985, p. 35) as they remake their culture. This dynamic facility of individuals to affect cultures was shown in action at the refinery when crew members were moved from their groups to become Safety Co-ordinators for periods of six months to a year, and then placed back in the groups. It seemed that this experience gave them added personal resources and know-how with which they influenced the safety values of their workmates. However, Eion Muffett, an interested observer of the culture of the crews, said that each crew tended to retain its cultural individuality for years, even though individual people might pass in and out of the crew.

THE INFORMAL ORGANISATION OF THE WORKERS' CULTURE

It is the shop floor workers who are exposed to the greatest dangers and for the greatest amount of time; thus it is at the shop floor where the refinery management focuses most of its efforts to establish a total safety culture. Management believes it is here that an excellent culture of safety will bring great

benefits to the refinery, but a poor safety culture will result in incidents and injuries. It is this shop floor culture which management is most resolved to change.

The dialectic inherent in this resolve is captured in the distinction sometimes made between the formal culture of the organisation and the informal organisation of individual work groups or strata (Kanter & Stein, 1979; Trahair, 1985). In writing about Australian workplaces, Aungles and Parker (1992) described the informal organisation bluntly as "how the organisation actually works compared to how it is supposed to operate" (p. 71). Trahair (1985) found a considerable number of informal working arrangements, particularly relating to pay and bonuses, among underground miners in Australia. In researching pilfering by workers, Mars (1994) found what he called 'covert institutions', informal arrangements made among workers often in self-developed hierarchies which mirror those of management. These covert institutions were dear to the people because they provided the framework for a whole range of unofficial action and social exchange. He therefore argued: "It should be clear that management or unions who introduce or propose a change to the workplace without considering its covert institutions are operating blindfold" (p. 202).

At the refinery, there was ample scope for an informal organisation because of a number of local characteristics. The length of time the refinery had operated with little change, the relative seniority (in age and length of service) of the shop floor workers compared with their supervisors and managers, and the very slow change to the composition of the shop floor crews relative to the managerial levels above them were among the factors which supported the development of Mars' covert institutions. Further, the demands upon the operators for flexible thinking and working to solve the constant breakdowns and difficulties of the plant gave them confidence in their 'alternative' managerial skills. Arising from these circumstances, what I found at the refinery was an informal organisation in operation wherever I looked, sometimes improving productivity by cutting through problems, and sometimes subverting the formal organisation in key operational areas. One example of how the informal organisation affected a fundamental feature of the refinery was the start and finishing times. I found it remarkable.

The official 12-hour shift cycle is 7am-7pm and 7pm-7am. A publication which is the refinery's official timetable titled *REFINERY 12 HR SHIFT ROSTER*

2001-2005 confirms these hours with the following statement printed prominently in red:

> DAYS, 7am, to 7pm
> UTILITY DAYS, 7am, to 7pm
> NIGHTS, 7pm, to 7am
> It then doubly confirms this information with:
> NIGHT SHIFT COMMENCES AT 7pm on the day shown

However, the whole refinery actually runs on a 6am and 6pm system. Bill Munro explained to me that the 12-hour shift workers preferred starting and finishing at the earlier times because it fitted in better with their home and family lives – they could be home in time for the evening meal, whereas the 7-7 shift made this hard. So the shift workers changed to the new hours some years previously, and that it how the refinery now runs. Perhaps the company does not care which start and finish hours are worked as long as the work gets done, and thus has not tried to enforce the formal hours or formalise the new ones.

Additionally, at some stage in the past history of the plant, the 12-hour shift crews adopted a pattern of work of their own design by skipping the first hour of work, a phenomenon I have noted previously. The two process controllers on duty did work because they had to. For the others, therefore, the real work started at 7am or 7pm, ironically coinciding with the old formal start times. The informal arrangement of the six o'clock start times and the subsequent 'lost hour' did not end there. At the end of the hour, the operators and cleaners in my crew would move into the foreman's office for their toolbox meeting which would last about 20 minutes. Most of this meeting was banter. Then they would move to the foyer of the control room where they would clarify their shift activities with the controllers. These foyer meetings also had little work content, but were good fun for the men because various other workers passed through the foyer and contributed to the banter, or were subjected to it.

Nichols and Beynon (1977) are among a number of ethnographers who have reported similar informal arrangements to create free time while at work. One of their interview subjects said:

> I mean this system that we have got down here now, I mean it is a system that we have only worked out ourselves. I mean management knows about it but they sort of turn a blind eye to it. I mean they don't 'know' that we do three-quarters of an hour packing and three-quarters of an hour loading and then have three-quarters of an hour off. I mean it's just something that we have arranged ourselves (p. 135).

The men on my crew arrived in the crib room at the start of their shift sometime between a few minutes before six o'clock and a few minutes after. Either way, they had an informal arrangement that a crew member would not go until his opposite number arrived. Thus the change-over was not uniform but progressive. An operator, Eion Muffett, explained to me that this arrangement, though informal, was rigidly enforced. He recalled that one evening he had arrived 15 minutes late in the crib room for his hand-over. The next morning, his opposite number was observed waiting in the change room so that he would be exactly 15 minutes late at the next hand-over. Harris (1987, p. 90) found a similar situation at the British chemical fertiliser plant but there, if an operators' relief failed to arrive at all, the operator would have to do a second shift. The 12-hour arrangement made this impossible at the refinery; but it was quite common in my crew for one of the men to send a message that he would be late. Occasionally, he could not come to work at all. Perhaps he had to look after a sick child or visit the dentist. Sometimes, the excuse was obviously flimsy and the man was just 'dragging his feet'. However, the cover for his absence was the responsibility of the other members of the crew, not the company. The men would simply work harder in his absence. This placed an extra burden on the solidarity of the crew. Dave was late more often than the others, and his absences seemed to go beyond what the group considered acceptable, so that he sometimes received a verbal pasting because of it. If he said something like: 'I don't feel like doing much today,' Fred Jamieson would reply with a statement such as: 'You haven't done anything here since 1982, you lazy cunt. July the tenth, that was the day.'[95]

If it is true that a culture derives from its individuals members, it is useful to examine the performance of individuals in the group setting. Among my crew members, three tended to dominate the social interaction; Fred, Darren and Luca.

[95] Personal research diary 1 April 2002.

Dave had long-ago become a verbal punching bag and so had Greg, the contract member of the group. George was somewhere in the middle. Luca tended to protect his quiet fellow-process cleaners Norm and Peter. Bert, the process controller being trained as a foreman, was ruthlessly teased. The process controllers Angus, Ian and Harry were also teased, Angus most of all until he was ejected from the crew. As Harris (1987) also discovered in her ethnographic study, the worst teasing was reserved for the foreman if he did something the crew could embarrass him about. "Even more marked was the one occasion when I saw a supervisor come [to work] late: then the whole period of the shift was punctuated by jokes his men made at his expense, and he had to take their laughter in good part" (p. 53). An equivalent event which I observed was a running joke which the men made after their foreman, Chris Jones, remarked that management had some matter 'in hand'. For the remainder of that shift and for several following ones, whenever a crew member raised a matter which was important to him – such as some equipment which needed fixing – someone would say with heavy irony: 'In hand'. The valuable feature of such rhetorical acts such as teasing and banter is that, while their symbolic context is clear to all parties, their intent is equivocal. It allows criticism to be expressed without antagonism. Turner (1990, p. 4) observed: "It is the very ambiguity of a symbol which makes it so useful." Moreover, teasing and banter provided a ready escape route of laughter for any member of the group at any time, as when Darren Redman was embarrassed at his sensitive reaction to discovering my writing up notes.

Finally, they served to emphasise the boundaries which separated the crew from the levels of management above them, starting with the foreman. It is commonly stated that the language of shop floor workers has the effect of delineating the boundaries between these workers and other work groups within their particular workplace (Harris, 1987; Turner, 1971). What seemed to differentiate the crews at the refinery was the frequent use of crude words and jokes. The crudity was at first confronting to me, but it had become such a casual part of the conversation that its users seemed to find it unremarkable. 'How'ya goin', cunts?' was a usual greeting to a group of mates, for example. What I could not anticipate, however, was a prominent vocal ritual which was harder to comprehend, farting.

Farting was an act I observed only among the crew members, and normally only in the crib room. It did not seem to be associated with any bodily need to pass

wind but with a desire to entertain. Most often, the farter was someone not participating in a conversation at that moment. In fact, it seemed that the aim of the fart was ritualistic, to produce the longest and most melodic note as a piece of entertainment, and to 'perfume' the air. I never heard farting performed outdoors.

The anthropological commentator, Mary Douglas (1978), argued that people in different societies have a drive to convert experiences into rituals. She argued: "No experience is too lowly to be taken up in ritual and given lofty meaning" (p. 114). In looking for lofty meaning in rituals involving the human body in primitive societies she argued:

> We cannot possibly interpret rituals involving excreta, breast milk, saliva and the rest unless we are prepared to see in the body a symbol of society, and to see the powers and dangers credited to social structure reproduced in small on the human body (p. 114).

The British comedians Peter Cook and Dudley Moore (1977) (as 'Derek and Clive') made something of the cultural significance of farting:

DEREK:I think, you know, it should be explained that farting is no laughing matter.
CLIVE: No, it's, it's a live art.
DEREK: There aren't many societies nowadays that devote their entire time and interest to farting.

My crew's farting did not occur so frequently, but there was at least one performance per shift involving at least two performers. Invariably, farting had the effect of stopping any conversation in the crib room. The reaction was generally laughter and feigned shock among others in the room, who would sometimes leave while the air cleared. It was hard to escape judging such farting as infantile, which did not mean it was without purpose. Gewold (2001) discussed a book by a South Korean Science Minister, Kim Young-hwan, with the title *Does a Fart Catch Fire?* which was intended to use vulgarity to interest children in science. The crew farting had a significance as performance. I also interpreted it as an act which delineated the crew from those above them. They knew that a manager or even a supervisor would never try to fart and was therefore not of the crew – the only more senior person I saw fart was Bert, who perhaps was attempting to balance his soon-to-be authority over his colleagues with a need to remain one of them in the meantime. The existing foreman, Chris Jones, did not fart at all, as I recall. Farting had the effect of keeping outsiders out.

Indeed, the act of farting helped to isolate the crib room as belonging to that particular crew. Any visitor might find himself subjected to a performance. Lastly, within the group, it affirmed the dominance of the dominant members, who used it to retain or regain the attention of the group. Saville-Troike (1989, p. 88) noted that members of groups tend to adopt exclusive varieties of language as part of their filling particular roles in a society. In my crew, farting seemed to be a variety of language which the crew learned and which those who were promoted had to learn not to use. The former operator, Eion Muffett, had a gloss on my interpretation of farting. He believed it was simultaneously a rebuff and an invitation. Any outsider able to fart convincingly would immediately qualify to be a member of the group. I was never able to perform *that* convincingly.

Farting was just one manifestation of the place of crude behaviour and language in the formation of the group. The crew members were aware of the offensive effects of their bad language upon non-members. They told me that they had to clean up their language if women came into the crib room. They also said they would not speak at home in the fashion they spoke at work. They were aware of limits to the offensive use of language and were prepared to abide by the limits. In one intense dispute in the corridor with his supervisor Mark, Fred began by freely using crude words but deleted them when Mark became more assertive. This seemed to show that Fred started off treating Mark as an equal but as Mark pulled managerial rank, Fred backed off.

* * *

While management talked about total safety culture, the men lived their own safety culture, characterised in part by their distinguishing between innate hazards and avoidable hazards. I wrote earlier about the crew members' acceptance of life among the innate hazards of the plant. This acceptance was at times a resentful one and at other times amused. During my tour with a Safety Co-ordinator, Rhys Williams, which I described earlier, we came upon a crew working on valves in the discharge area of the refinery. This crew had been rostered to change a valve at a place where high-pressure liquid mud residue from the thickeners was piped to settling dams some distance away. One of the crew pointed to fresh mud about 10 metres above us, splattered on the underside of a conveyor. Apparently, a nearby high-pressure pipe had burst, just where the valve was located, and the material had

shot out at great pressure. Rhys's retelling of this story got a smile of amusement from the crew. One of them said to us: 'I guess we won't be doing that valve today…' Rhys later explained that this blow-out was a highly hazardous event, and apparently unpredictable.

The crew could afford to laugh about, or at least to minimise, such innate hazards of the refinery because they had come to know them and make the many small behavioural adjustments to accommodate them as best they could. I found that the workers often talked about the innate hazards of their work and shared their opinions, whether seriously or mockingly. Vecsey (1974) described how coal miners minimised their concerns about the innate hazards of the pits and their injuries by this process of sharing. He described how a coal miner, Raymond, catalogued his injuries: "His buddies half-listen to Raymond's story. Most of them can match it, fracture by fracture, wheeze by wheeze….Over the years the men build up friendships with each other that are not equalled in many marriages or families" (p. 124). As I noted in Chapter 4, through local insights and by discussing how they liked to do their tasks, the workers reached an inclusive and cooperative work style and thereby determined as a group how they would manage these unpredictable hazards which the company did not acknowledge in its zero-injury rhetoric (Raeithel, 1996, p. 329). It might not have been the total safety culture envisaged by management, but it was a safety culture and it was the one which was put in practice. Kusterer (1978) explained how the workers he researched put to the back of their minds the work factors which did not change over time, such as innate hazards. The workers tended not to treat such constant factors as problems which required their direct attention and efforts to solve. It was the variable or new factors which were at the top of their minds. "Constant factors in the work environment fade into the background, becoming part of the social work life of the workplace. Working knowledge is learned as part of a problem-solving mode – constant aspects of the work environment are either not problematic or they are not allowed to remain constant" (p. 132).

The safety culture of the crews was therefore a local adaptation brought about by the circumstances of their work. What I observed, however, was an adaptation which went beyond putting the hazards to the background of their minds. It was also a product of the pressures of the job. I noticed many times the strain which the crew

was under to keep their part of the plant operating, despite break-downs. This was because the crew often had to devise solutions to multiple failures of the equipment for which I thought engineers would have been responsible. Many times, there was tense dialogue over the two-way radio between the process controllers in the control room and the operators or process cleaners in the crib room (or outside in the refinery), as between them they tried to find ways to keep production at acceptable levels. The crew had to come through these difficult experiences – which certainly increased the hazards of their jobs – while preserving the good relationships within the group. What surprised me was how much expectation this placed on shop floor people. Fortunately, the crews found satisfaction, along with the strain, in resolving these production challenges. Kevin Rumer told me about troubleshooting this kind of problem:

> Most times it's actually solved on the shift by the operators and the control attendants. It's not until it becomes a huge problem, or it's so difficult to try to fathom, that other people are brought in.
>
> We find troubleshooting quite enjoyable. When we have problems out there and it is actually up to the operator to find out what is going on and what is the cause of the problem. That's the part of it [the job] that I find interesting. Working with the people in the control room: 'Let's get the figures down and see what is happening here and then let's try and work out why such and such isn't doing what it's supposed to'. Going through the variables and finding out where the problem lies. Trying different things, using your imagination. That's a good part of the job which I love.[96]

WOMEN OF THE REFINERY

The refinery is a place of men. As I have earlier pointed out, when I was at the refinery, only 36 of the 956 direct employees of the company were women – fewer than 4% – and probably a small proportion among staff of contractor companies which did not have administration staff on site. Moreover, these women were almost all in clerical/administrative or health jobs – I encountered only two in the whole refinery who had production-related jobs – a gender distribution which Williams described in the Australian industrial context as women's confinement "to

[96] Interview with Kevin Rumer 8 March 2002.

a narrow band of sexually defined occupations" (1999, p. 528).This situation at the refinery had implications for my research into the working lives of women there, because the women's isolation from one another meant they could reflect only on their own working lives and only distantly about the working lives of other women or not at all. For this reason, what these women made of their working lives involved their comments upon the male working cultures in which they participated, albeit as outsiders. Southend had one woman, Jeanette Drake, a contractor employee who organised supplies for the crews from the stores. Strictly speaking, her 'clients' were the process cleaners who used large quantities of consumables when servicing the heaters, digesters and so forth. She only worked days and therefore dealt with all five crews as they rotated through the roster. It was a while before I noticed Jeanette's presence. She rarely came into the crib room. When she was in Southend, I would sometimes find her outside the room having a smoke in a lean-to tin shed among all the filth of the refinery. She explained that this was her choice of 'half-way house' between full inclusion in the crew life and complete separation from it. The shed was the place were smokers smoked. She explained that one of the ways she accommodated herself to the refinery culture was to take up smoking so she could sit with men in the shed. She explained:

> I went to the extreme to try to fit in here, because my job meant almost everything to me, that I took up smoking initially to fit in. I've been a smoker in the past and I know that I can stop if I want to. But I'm comfortable with it. And I know if I don't come here I will miss out on a lot of the interaction.[97]

When I commented that the shed seemed to symbolise her being an outsider, she warned me not to go too far. 'In the other shifts this is the place to be. It's the gossip area. But in this shift, they don't normally smoke so they don't come out here.' She described what it was like to be accepted into the crew culture:

> Initially I found it very daunting. But that was because I was coming into a new environment. This environment is very, very strange to come into. It's like coming into a family which is very tight-knit. It's like the mafia, if you're not accepted into the family, then you're not accepted. I feel like I'm accepted now.

[97] Interview with Jeanette Drake 12 April 2002.

Jeanette described her method of gaining acceptance apart from going to the smokers' shed: 'You just have to put your head down and do the work.' She said that women in the production areas were highly visible. There was plenty of banter and ribbing directed at them which she had to 'cop', especially as she was a contract employee.

> I've been in a lot of male-oriented environments before, and I'm pretty well conditioned and I can let a lot of things slide that aren't necessarily meant personally. [It] comes pretty close to discrimination quite often but I also notice that it's not me. It's not all aimed at me. It's not aimed at anyone. It's just the way of people adapting. Quite often I let things slide.

Applebaum (1981) reported a similar coping mechanism in a strongly male workplace when he wrote about the culture of an American construction team, which had one woman only, a truck driver.

> Mary was well aware of the type of conversations and jokes that swirled around her, but she always maintained her aplomb and dignity. She could engage in repartee or ignore some silly remarks, but she always insisted on being a full, participating member of the construction team on the job (p. 131).

In each instance, the price of membership in the group culture seemed higher for the woman than for the men around her, but the rewards seemed clearer to them than they were to the men. Research into Australian women's experience of industrial work claimed to find clearly articulated notions of satisfaction sources. For example, Donaldson (1991, p. 35), who researched working class lives in the industrial city of Wollongong, reported considerable clarity about the satisfaction that women derived from their paid work. Even though Jeanette was the lone female in Southend who had a production-related job, I felt that the experience she described was rooted in the clarity of her self-awareness in this male work setting. Moreover, Jeanette was attentive to the experiences of other women in the refinery, and seemed to seek out other women to learn how they coped with common problems such as the male banter and ribbing. Just as Mills and Murgatroyd (1991) found in the context of their research of rules in organisation, the few women at the Orco refinery had made their own adaptations and reactions in response to the male-oriented value systems applying there. Jeanette had resumed smoking and accepted exclusion from the crib

room. Contrary to Mills and Murgatroyd's (1991) belief that some of those male values were the result of wider society's view of the social and working worth of the women (p. 14), the male members of the refinery seemed to value women quite differently at work compared with away from work. There was certainly a 'crib room attitude' to women which was reminiscent of the infamous barrack room of the military. I noticed that members of my crew would challenge each other to dare to use crib room language, or tell crib room stories to their women at home.

THE ROLE OF COMMUNICATION IN FORMING THE CULTURE

If the safety culture of the shop floor of the refinery fell short of what the organisation was hoping it would be, could communication help to close the gap between the two sides by playing a role in culture (trans)formation?

In this chapter, I have attempted to analyse the way culture and safety culture were formed and transformed among the hierarchical groups in the refinery. The culture of my crew was formed out of the unique circumstances of the 'bottom' of the hierarchy. Of course, the Refinery Manager and his top managers were not at the top of Orco. They were just employees of the giant worldwide organisation, so their culture was also formed out of the circumstances of their particular position in the larger hierarchy. The Refinery Manager talked to me about the pressure upon him and his top colleagues to be always achieving improvement. Whether it was because of external commercial pressure from head office in Cleveland or just an internalised desire to improve, the refinery management was expected to perform better every year – to produce more with less. 'No peace. Never will be,' this Refinery Manager told me. 'It's not that I've got someone ringing me every second day saying "What are you doing?". But it's just that the management is very conscientious and keen to always improve. People want to go on to the next production record. I suppose it's an internal push rather than an external one. We are very much a "yesterday's record is today's target" type of organisation.'[98]

He might not have had Cleveland ringing him every other day, but there was no doubt about the expectations from the top of the company: 'The pressure is certainly always on to improve. But it's not "If you don't get the tonnes up we'll kick

[98] Interview with Dennis Lloyd 7 February 2002.

you out of there." To be honest, you're more likely to be moved out if you're not performing on the safety, environment and customer fronts. The organisation takes those as essential elements in managing. The pressure really comes on when the safety goes backwards,' he said. Perhaps it was ironic therefore that in the year of the major reorganisation which was commanded by Cleveland, the safety record of the refinery did go backwards. However, this was after my period of active research at the refinery ended. While I was there, safety was expected to improve each year and new ways of making it improve were constantly being sought. Changing the safety culture was one perceived way of achieving this outcome. A safety manager himself, Mansdorf (1999) commented that the pressure of continuous improvement has made safety managers and line managers 'increasingly desperate' to find ways to demonstrate that this year's safety is better than last year's (p. 110).

Another Refinery Manager told me that he wanted my research project to teach him how to use communication to achieve better safety. 'It's about finding out the scientific way of communicating and improving safety,' he said. 'Most of our safety activity is experiential. We tend to have lots of ideas and put them into effect. The ideas keep coming. We want to know what is the science.'[99] In going on to explain these words, he made it clear that what he was seeking was a kind of magic channel down which messages could be sent to the workers which directly triggered the desired effects on their attitudes and behaviour in relation to safety. I could not argue against his wish for the admirable outcome of fewer injuries, but the more time I spent among his people subsequently, the more I saw how misconceived was the means. This manager readily admitted his ignorance about targeted communication for the achievement of safety, but was under pressure to improve upon his refinery's position as the worst all Orco's refineries in this part of Australia. He said:

'We do a lot of communicating, but how much of it sticks? There are a lot of people putting out messages but we don't know much about why some of them are responded to and others not.'

It was the word 'sticks' which caught my attention. It represented what I privately dubbed the 'sticks and fix' approach to communicating. If the message sticks, it might fix the problem. In the absence of useful guidance about the science

[99] Interview with Jon McIntosh 9 December 2000.

of communication, the Refinery Managers and the senior safety managers relied on their native communication abilities. Matt Barnard, an Occupational Health, Safety and Environment Manager said:

> Communication is absolutely fundamental. There is a massive range of communication that goes on here, and I don't think we've analysed it sufficiently to say what combinations of communication should be used, because we tend to use everything, rather like a shotgun.[100]

This approach to communicating safety was echoed by a long-serving member of Orco's public relations team who had previously worked at various refineries and who now filled a senior position at Orco's Cleveland head office. He firmly believed that Orco used a model of communication with its employees which was common throughout the world: 'Press agentry make no mistake about it',[101] he told me. The term 'press agentry' is a model of monologic communication (Botan, 1997) normally associated with publicists which is 'designed to produce favourable publicity especially in the mass media' (Lindeborg, 1994, p. 8). In other words, this manager believed Orco practised one-way communication with its people, in this instance, to publicise safety. A member of the Communication Group at the refinery seemed to confirm this view – that communication was the act of imposing information on employees – when she said:

> The fundamental rule in communication is that not one form of communication is going to do everything for everyone. So it's necessary to have a good mix so you can deliver the information to as many people as possible. You can't just make a cake with eggs.[102]

This monologic approach to message communication was mirrored in the refinery's approach to the safety culture. The safety culture was to be manufactured at the top and implemented at the bottom. These were the two forms of 'ethnocentrism of management' (Mars, 1994, p. 200) in play simultaneously in the refinery's attempt to bring about a total safety culture. The first was a tendency to communicate in one direction only and the second was the intention to impose management's safety culture upon the shop floor workers. The man in the Cleveland

[100] Interview with Matt Barnard 8 July 2003.
[101] Interview with Michael Trott 9 June 2002.
[102] Group interview 15 May 2002.

office was right: there was an inability of management both to understand and to communicate with other hierarchical groups represented in their workforce; the shop floor most of all. The members of the Communication Group were aware that the media which management preferred – employee video programs, newsletters, toolbox meeting memoranda and noticeboards – had limited effect on shop floor workers, but they had not confronted management about this problem. These communication specialists had therefore done little to find alternative media which might be more effective. Similar problems existed with the programs which were introduced at the refinery, such as BBS. Petersen (1999) argued that BBS approaches will not be effective in certain organisations: "In some companies, observing your peers would be unacceptable and uncomfortable. In some organizations, there is a deep mistrust between management and workers. In these organizations, much needs to happen before the behavior-based concepts can be successful" (p. 31). Top management and safety managers at the refinery did not indicate to me that they were aware of the cultural characteristics of their crews which might render programs like BBS or safety communication ineffective.

Well before my time, however, I was told there had been a Refinery Manager who was aware of these matters and attempted to respond to the shop floor culture. Ralph Anderson alluded to his approach in a discussion about the reasons for this Refinery Manager introducing SMAC. 'He was looking for a cultural change. He was looking for an autonomous type of workforce, with people who start to act responsibly and manage on their own.'[103]

How important is this gap between the culture of the shop floor and that of top management in the latter's efforts to establish a safety culture which they believe will reduce accidents to zero? Mansdorf (1999) felt it was crucial, and that it involved communication: "The typical diagnosis is not hard to predict. It usually involves a serious gap in the safety message and philosophy between the most senior management and the supervisor and workers. My experience is that the message typically gets lost within middle management" (p. 110). There is reason to believe that communicating to change a safety culture is not one of the everyday skills of management, or common among safety professionals in organisations. It might be

[103] Discussion with Ralph Anderson 25 October 2001.

significant that a leading tertiary teaching text on occupational safety and health in Australia contains no guidance on communication, even in a chapter titled "Communication and Involvement" (which is devoted to industrial relations matters) (Bohle & Quinlan, 2000). A survey which I conducted into 187 of the corporate communication departments in Australia's largest employers[104] showed that only 12 per cent actually initiated safety and health communication performed in their organisations. Instead, the human resources departments did most of the initiating. The communication managers rated the importance of safety and health communication only slightly above 'medium',[105] even though most of their organisations state that safety is the highest corporate priority. Communication has a central role in any process of culture change or alignment, but even when its role is recognised, the qualities of communication are not apparently understood and probably not employed.

HOW THE REFINERY COMMUNICATED SAFETY

Orco believed in safety and believed in communication. One of the Refinery Managers told me: 'My number one aim before everything is to operate the refinery in a safe manner'.[106] The effort made by the Refinery Manager to communicate safety to his workers reflects this high priority. Safety communication is done principally through the formalised channels of a staff newsletter published every two months; a staff video news program produced twice a year; *Toolbox Topics* distributed to foremen for discussion at toolbox meetings; noticeboard messages and signs; discussions and information via e-mail; screen-saver messages on desktop computers; plus SMAC and its associated campaigns and activities.

The newsletter is delivered to employees through the mail to their homes, so that families can learn about the refinery activities and receive its news. (It is not mailed to employees of contractors.) Each edition is accompanied by flyers and other promotional material on topics such as the refinery's environmental initiatives, or personal health. For example, the December 2002 newsletter package contained:

[104] The mean number of employees of respondents' organisations was 7,349.
[105] Unpublished research by the writer during 2001.
[106] Interview with Dennis Lloyd 7 February 2002.

- the 28-page newsletter,
- an 8-page health newsletter provided by a commercial publisher,
- a 4-page newsletter about the refinery's community consultative network,
- an 8-page newsletter about the refinery's environment efforts,
- a flyer about part-time courses at a local university,
- a flyer about drink-driving,
- a car rubbish bag printed with a message about drink-driving, and
- a drink coaster printed with information about drink-driving.

The newsletter is the prime medium of formalised communication and contains substantial coverage of safety. For example, safety information and news usually occupies six or seven pages.

The refinery attempts from time to time to find out what its employees think of the formalised communication. A survey was conducted during my time there among current and former employees who receive the newsletter, including retired employees. The survey received 88 responses. Results indicated that all respondents read at least some of each edition. Topics the respondents preferred to read about are illustrated in the following table:[107]

Table 3: Responses to survey of refinery staff newsletter (N = 88)

Topics respondents want to read about	Responses
Refinery people at work	76
The environment	75
Health	75
Work projects	69
Safety	68
Community involvement	65
Cost savings and shareholder matters	51
Customers	51
Refinery people at home	49
Other	4

Unfortunately, this informal survey gave little further help in evaluating the true communication effect and value of the newsletter due to its narrow scope and small response. Participation in the survey was by self-selection and the opportunity to comment on other factors survey were limited to:

- Information about the respondent's employment status (current/former employee/family member) – 69% were current employees

[107] Respondents could nominate as many topics on the list as they wished, so the total of topics nominated exceeds the total of respondents.

- How much of the newsletter the respondent read – 69% read all and the remainder read some
- Which members of the family read the newsletter – all but 15% of the respondents who are current employees read it
- The hobbies of the respondent

There was no question relating to factors such as readability and credibility. However, the Health and Safety Supervisor, Andrew Smith, said: 'Feedback is that it is not very effective for the general [refinery] populace.' He added, almost apologetically: 'At the end of the day, it's one mechanism of our program.'[108] The members of the refinery's Communication Group also do not believe the newsletter is particularly clear in its purpose or effectiveness. One told me: 'The newsletter…does not have the readership which management expects it to. There is a debate about whether it is management's tool or the crews' tool to communicate.'[109]

The stories printed in the newsletter are selected in a semi-formal arrangement. The newsletter editors (there are two editors who job-share the position) receive tips and suggestions for stories through their personal contacts in the refinery, and are also given story directives from the Refinery Manager and his other managers. There is a standing requirement to include stories on the environment, community involvement, sponsorships, awards to and by the company, and safety. Safety stories generally originate from the Safety Department. Andrew Smith said:

> We tend to write a lot of the safety things, such as [the] job observation [program]. We take a lot of care to put in stories about shop floor guys that will grab their interest. We don't put too much technical stuff in the newsletter these days. Marg Winter comes to us [for stories] and we certainly relish that opportunity to put information on BBS, SMAC our SMAC Awards, people who have been recognised that month; initiatives that come up. That's why there are maybe half a dozen pages.[110]

Of the other means of formalised communication, the video news program appears to make little impression on the workers. Some of the crews reportedly showed it at their periodic safety meetings, but I never saw this happen. The *Toolbox Topics* contain safety information to be used at crew toolbox and safety meetings,

[108] Interview with Andrew Smith 8 July 2003.
[109] Discussion 5 October 2000.
[110] Interview with Andrew Smith 8 July 2003.

and come in the form of a kit which is distributed regularly to each foreman, supervisor and Safety Consultant. The kit includes a form which the foremen are required to sign to demonstrate that they have covered the topics at meetings with their crews. Eion Muffett had a sceptical opinion of the *Toolbox Topics*. He said their contents were not what the crews considered significant or important. The foremen mostly gave the memoranda lip-service. 'The foremen fill out the form which says they've covered them in the toolbox, and that is fed back to management each week. The forms are paid attention to because management pays attention to the forms. Management don't pay attention to the content, but they do pay attention to the right boxes being ticked.'[111] The operator on my crew, Fred Jamieson, said of the *Toolbox Topics*: 'It comes down to them [foremen] and they have to relay it to us because that's what they've been told. A lot of them haven't got the man-management skills. They haven't been trained to get over what they want to say, or it doesn't come out right.'[112]

Of the remaining means of formalised communication, safety information is provided on noticeboards throughout offices in the refinery, and on illuminated displays at the main gate. Various crew members commented to me that they did not want to 'waste time' at the main gate when they are hurrying to get home or hurrying to get on shift. The screen-saver messages are much more visible, because they appear on all desktop computers, which are in every office. Their disadvantage as a channel for communicating safety is that shop floor people do not have computers in their crib rooms. The screen-savers are produced by SMAC, which I discuss in detail in Chapter 7.

Despite the resources used and efforts made to communicate safety through these formalised means, researchers of employee communication have generally claimed that the most credible and trusted source of information, including information about safety, is the informal means of interpersonal communication, particularly between employees and their immediate supervisors (D'Aprix, 1977). If employees perceive open and honest communication at this level, they tend to identify with their organisation by exhibiting supportive attitudes. This is the case even when they do not like the formalised communication (Smidts, Pruyn & Van

[111] Interview with Eion Muffett 15 May 2003.
[112] Interview with Fred Jamieson 4 April 2002.

Riel, 2001). A Safety Consultant at the refinery, Roy Levinson, told me: "Safety can be very mundane and it needs to be personalised. If you can do that you are probably 50-60 per cent of the way to achieving reasonable safety, because you are automatically changing attitudes by personalising it.'[113] The people he was advocating to personalise safety were the foremen. Andrew Smith said:

> I'd say the most effective communication is the toolbox [meeting], where the foreman or the Safety Rep is delivering the information to a person one-to-one. You can have printed media, e-mails, displays at the front, but at the end of the day, people will register the information when someone in authority is giving it to them. I think that is very influential.[114]

However, foremen do not find it easy to fulfil the safety communication onus placed upon them. One foreman said to me: 'The hardest part is building credibility for yourself as supervisor. The instructions are seen as coming down from management and the job at our level is to have our instructions understood and respected. There is a fair amount of "them and us".'[115] Another said: 'Some of the people find it hard to believe that safety messages are not just people saying the words. It takes a long time to get the message across that I'm not just saying these things because I'm told to but because I mean it.'[116] This foremen also wanted to explain how communication at his level is continually threatened by incongruent communication from above: The Safety Consultant, Steve Bush, said: 'All the information which is coming from us and upper management says one thing, but all the behaviours that their location managers are exhibiting are giving a different message.'[117].

Safety information passed down for discussion at local meetings, such as toolbox meetings, is highly vulnerable to the quality of those meetings. In the light of the comments (above) about the *Toolbox Topics*, I noticed very little serious information being presented at the toolbox meetings I attended (except for information relating to the current work programs). Foremen would sometimes even prejudice such management information by introducing it as something they were

[113] Interview with Roy Levinson 18 January 2002
[114] Interview with Andrew Smith 8 July 2003.
[115] Interview with Ben Clifton 8 February 2001.
[116] Interview with Joseph Ewers 8 February 2001.
[117] Interview with Steve Bush 21 December 2001.

required to present. Although toolbox meetings and other briefings are almost universally conducted in industrial workplaces, there has been little research into their effectiveness. Gamble's (1999) investigation of team briefings in a successful British retailing chain revealed how little was achieved in practice. The *Toolbox Topics* system at the refinery was similar to the team briefing system. Gamble reported: "The success rate of the briefings observed, based on recall, was not very high. Participants were unable to remember the main messages and in many cases simply recited stock phrases which they might have expected to hear….This situation was most noticeable with the older and more experienced staff, perhaps indicative of 'briefing fatigue' caused by regular, frequent communication of similar messages" (p. 265). Gamble also found what I found: The organisation believed in the need for, and potential benefits of, briefings – but did not have the mechanisms to make them successful.

There are other ways in which the company's communication can be hostage to the foremen's communication actions. At the Johnson & Johnson plant in the US, Grenier (1988) observed team meetings which the company had formalised through controlled agendas, and through facilitated team discussions about corporate information. Grenier reported that, by following the agenda the company had given to them, facilitators could maintain control of their teams (p. 49). However, he noted that when relations at the plant began to deteriorate over an industrial relations matter, the meeting facilitators began to see the corporate information as propaganda and responded by merely reading management's memos verbatim rather than a more involved, discursive reading as previously (p. 129).

Sometimes, effective interpersonal communication comes in forms which may be hard to recognise. One such, which made an impression on many at the refinery, was an on-site stores delivery van which was decorated with idiosyncratic safety messages by its driver. One worker told me: 'One thing that still has significant impact is the little stores truck. People tend to take notice. Some think Mick [the driver] is a lunatic. Other people, like me, look to see what Mick's done to his truck this week.' How much do Mick's messages contrast with those from the chief executive of Orco's Australia operations? The photocopy of an e-mail message sent by this person from Cleveland appeared on the noticeboard in the crib room one morning:

> A few minutes ago, at [Orco's] Global Leadership Awards dinner, Orco Australia won the trophy for 'Best People Work Climate'. This is a tremendous achievement – congratulations to all for your contribution towards this prestigious award.

I wondered about this. First, I was impressed that this news had been spread so quickly and thoroughly in the organisation so that it reached every workplace within hours. Then I wondered what a 'best people work climate' was. None of my crew seemed to know, or care. Thus, whenever top managers in a place like the refinery set out to change the culture of their employees, they have a communication ally in the foremen, but may have a communication enemy elsewhere. Sometimes, the enemy is themselves.

While it appears foremen can achieve much through their interpersonal communication, recent research shows that interpersonal communication is more complex than previously thought. Sinickas (1992) argued that employees want to hear about certain topics through their foremen and about other topics from more formal means such as a staff newsletter. These 'other topics' are typically ones about the present circumstances of the organisation and its future prospects. The formalised communication of an organisation must be matched with the interpersonal to ensure a thorough coverage, she argued. Cameron and McCollum (1993) found in studies of two very large industrial organisations that the workers wanted to receive more information about their company's business, its future and matters affecting them and their jobs. Most significantly, shop floor workers wanted to receive this type of information directly from management, rather than from foremen, but they wanted it to be through personal presentations and face-to-face meetings (p. 248).

Clampitt and Downs (1993) investigated the relationship between employee satisfaction with organisational communication (both formalised and interpersonal) and productivity. They found that employees were not merely satisfied or dissatisfied with communication as if it were a single entity, but could express varying degrees of satisfaction about definite categories or types of communication (p. 6). Overall, Clampitt and Downs found that communication had a positive effect on productivity, but their close analysis of the data revealed that certain communication factors had greater effects on productivity than others. The two-way nature of interpersonal communication with a foreman or other close supervisor had a significant positive effect on productivity. Formalised communication of company information had a

relatively low but positive effect (p. 11). By 'company information' they were referring to information which can be found in most staff newsletters, such as "items on notification about changes, information about the organization's financial standing, and information about the overall policies and goals of the organization" (p. 6). It seems reasonable to conclude that a similar situation would be found at Orco in research into satisfaction with safety communication and safety performance.

* * *

Sriramesh, Grunig and Dozier (1996) argued that culture and the internal communication of an organisation are in fact in a reciprocal relationship. "Not only does culture define the nature of communication in an organization, but communication is one of the ways by which organizations develop and maintain their cultures," they argued (p. 238). The significance of this, they said, is that the formalised communication of an organisation can be used to achieve culture-change effects, and vice versa. In this reciprocal relationship, an effective intervention can be made to the communication or to the culture. Sriramesh *et al.* recommended that professional communicators could intervene most effectively by changing the nature of internal communication rather than by trying to manage cultural change through other means. Better communication by a company with its employees will thus bring about changes to the culture which are conducive to improved outcomes, including improved safety outcomes (p. 257). This argument suggests that the Communication Group would have more effect by developing productive two-way communication than by the current safety press agentry technique through formalised channels of doubtful quality.

Sriramesh *et al.* condensed all the characteristics of organisational culture identified in the literature into two general dimensions: participatory and authoritarian. In a large-scale quantitative survey of US, Canadian and UK companies, they demonstrated that a participative style provided the most nurturing environment for a good quality of communication, and good quality communication provided a nurturing environment for participative style. In his research, Hofmann (1999) found that a participative style in an organisation provided a framework for shop floor people to engage each other and their foremen in productive dialogue about safety. Hofmann used social exchange theory (which argues that beneficial acts are reciprocated between members of a given social grouping) to demonstrate a

correlation between the good shop floor/foreman relationships and several positive safety factors. These factors are that workers feel free and are willing to raise safety concerns; they show their commitment to conforming with safety procedures and practices; and there is a lower incidence of accidents (p. 287). Merging both pieces of research leads to the possible conclusion that open and honest communication within an organisation can help establish an environment in which a culture of safety can prosper. The medium in which this culture of safety can flourish is a participative culture native to the shop floor, not a culture belonging the top management and imposed upon workers. Top management can best contribute, however, by establishing a regime of open and honest communication.

Yet, in so many ways, imposing a culture is what the refinery was committed to doing. As noted above, with the exception of SMAC, the refinery top management conducted its communication in one direction with its people. This was despite having what appeared to be effective procedures for wide consultation and involvement in matters affecting employees. One-way communication was also practised despite ample empirical evidence that top-down communication has a limited role (Callison & Zillman, 2002). The culture of the refinery's shop floor was conspicuously resistant to change and to messages from top management. It was well-equipped to resist, and was practised in such resistance. As I have shown, the crews remained in stable groupings for long periods of time, certainly longer than the managerial groupings. During my 18 months at the refinery, in additional to three Refinery Managers, my crew had two supervisors and two foremen. Each change was accompanied by a new management style and new ideas about how the crews should go about their work. Meanwhile, Eion Muffett and Kevin Rumer confirmed to me that each shift crew developed work practices and characteristics which were intense, different from those of other shifts in the same business centre and long-lasting.

Kevin and his work colleagues therefore believed it was hard for a distant and transitory management to change the safety culture of a group fixed in its ways. As Safety Representative for his crew, he indicated he was struggling to be bring about much change in the safety attitudes and behaviour among the crew. On the other hand, he was pleased that his crew were a mature and sensible group of people with a

good safety record. The stasis cut both ways.[118] The particular crew who decided to improve their own safety situation (as discussed in Chapter 4), illustrate that culture change does not have to be actioned officially. The way they went about it was to build on the good (safety) qualities of the best members of the group, raising the standards of the others to their level. Newer members of the crew were shown the safest way of doing their tasks by the safest workers, who were also positioned to exert a stronger influence on the whole crew. More generally, the crew members all agreed that they would make a greater effort to be safe and they encouraged each other to be so. It appeared to work. Charlie Rogers, then a member of the crew but later a Safety Co-ordinator, explained how they were all pleasantly surprised that it made such a difference to their safety record.

What struck me about Charlie's story was his insight that it was the crew itself which had changed its ways of being safe, which *he* described as its 'safety culture'. I could see why he was keen to tell me. It was not just the extraordinary results the change had produced, but the pleasure he gained from experiencing the culture change. Despite later being exposed to formal aspects of safety management in his new role as a Safety Co-ordinator, his judgment about the importance of the event had not altered. The change had come from within, and was unquestionably authentic.

Juravich (1985) described a similar drive for improvement within work groups doing menial tasks at 'his' factory.

> What I think is often misunderstood is how in fact people on the shop floor…survive. Perhaps one of our basic means of survival as a species is our ability to make meaningless situations meaningful. Among prisoners in concentration camps, children in abusive homes, and citizens in the midst of national terror are those who can miraculously create meaning and order in order to survive.
>
> And despite what managers may feel about America's declining quality, most workers want to increase this meaning by performing their jobs as well as they can (p. 130-1).

Kanter and Stein (1979) suggested that a shop floor culture develops as part of a process in which the workers make it "possible for people to *survive their work*

[118] Discussion with Kevin Rumer 8 March 2002.

[author's emphasis] in the long run, to remain human and therefore, in fact, to have the energy to continue to come to work year after year – and to contribute to their families and society (p. 183). Several shop floor workers made this exact point to me, including Luca Rossetti, who explained that they simply had to work at what he called 'a measured pace' to perform their tasks year after year.

The time I spent at the refinery persuaded me that, whatever view one takes of culture in the workplace and however many individual subcultures can be discerned there, each has an importance and a strength which should not be quickly dismissed. The popular 'culture change' programs, or attempts to impose a culture which is not native to the employees, will fail partly or wholly if imposed top-down. To succeed, an employer must have all other aspects of its organisation playing a supportive role (Petersen, 1999), preferably sharing ownership. In his review of the use of safety culture up to the end of the 1980s, Scott-Morgan (1994) said: "More and more executives had come to recognize that invoking the 'corporate culture' as the barrier to change did not actually move things forward very much further. Locating the source of the failure in the corporate culture might have sounded like a diagnosis, but it certainly did not lead to an effective cure" (p. 12).

What was missing was a recognition that the shop floor culture might be the source of success. It is certainly sufficiently powerful to require consideration. The former chief executive of Volvo, Pehr Gyllenhammar (1977), pointed out from his experience: "In any show of power, the workers will 'win' and management will 'lose', although the real result is, inevitably, that everyone loses" (p. 6). How much less likely to succeed will be programs of change which are transitory and lacking continuity, as I found at the refinery. 'We're good starters, but bad finishers' is how one member of the communications group described the management of these programs. Beck and Woolfson (1999) suggested why any external attempt to change a shop floor safety culture is likely to fail. Firstly, it will be impossible to establish cultural control over a diverse and heterogeneous workforce. Secondly, company-imposed dictats and safety cultures are likely to confuse the collective understanding which the shop floor people already have about themselves and workplace dangers through their everyday experience. Thirdly, the imposition of a form of safety 'mono-culture' across the organisation reduces the range of perspectives on safety which exist (p. 16). Beck and Woolfson instead argued that the culture of safety, with

its many subcultures, takes time to establish but, once established, belongs to no particular group. It is a collective commitment to safety, grounded in the practice and experience of the people working at most risk (p. 14).

Moreover, there is surely an ethical dimension to any attempt to change a culture even under the authority granted to managers of companies by their owners and shareholders. In attempting to achieve culture change by defining the culture in management terms, workers are seen as the problem (Aungles & Parker, 1992, p. 26). Beck and Woolfson (1999) remarked that the UK's peak employer organisation, the Confederation of British Industry, defined safety culture ('the way we do things around here') in terms which demonstrated management's belief that it owned the ideal safety culture; it was thus constructed as something which management could dictate and create. This thinking, Beck and Woolfson argued, is an approach to safety "rooted in a faulty and biased managerialist framework" which is "little more than a manipulative tool for the control of actions and even the beliefs of the workforce" (p. 15).

Peters and Waterman (1982) found in studying 14 large American companies that excellence does not result just from their organisational structure and management actions but from a combination of factors including the shared values of the people. I argue that safety does not solely result from excellent safety and health management systems (including the formalised communication of safety) which are run by managers. Safety also results from these systems' congruence with the culture of the people of the shop floor. In fact, companies should envisage safety and health management systems as incorporating the culture of the shop floor. Perhaps by taking an interpretivist approach, management might envisage the safety culture as being the organisation.

* * *

While was at the refinery, I was able to watch the refinery crews in their daily routines, responding to events external to them and, in turn, affecting events around them. It is commonplace for a researcher to analyse how workers make meaning of their workplace reality by scrutinising the unfolding of such which unfold and the settings in which workers find themselves (C. Mills, 2002). At the refinery, as in any workplaces, the crew members had to struggle to understand what was going on around them, where they fitted in, whom they could trust, how they were judged by

their superiors, peers and subordinates and how to interpret events in terms of their personal interests. Yet the struggle was not equal. Some seemed to struggle more than others. The meaning-making seemed strongly influenced by individuals within the crews whose role included directing the meanings of other members and guiding them to the judgments they formed (Katz & Lazarsfeld, 1955).

These were the crew members whose more forceful social behaviour allowed them to intercept and influence the meaning-making of the group, and stamp their own meaning on many events – Shein's 'cultural reproducers' again (1992, p. 244). They differed from other crew members who seemed willing to passively receive much of this meaning ready-made. Still others partially opted out of the process and appeared to be perpetually 'outsiders' even while they were members of the group. In my crew, more vocal members like Fred and Luca seemed to take a leadership role and I felt that it was particularly through them that the culture of their crews was defined.

In this context, an event occurred during my time with them which made an impression on me about how the group lived their work lives and coped with the constant threat of danger. It illustrated to me how alien was the work of the shop floor people from that of the managers and how these workers might be justified in thinking that the managers' concept of safety could not apply to their reality of work. The task I describe is 'dropping a line of heaters', which begins by opening the valves at the base of a row of liquor heaters to ensure that no liquor remains inside. The crew are using a new machine which drills out any valves which are blocked by a crust of liquor. Earlier, management substituted this machine for one which the workers' preferred. So what follows is a description of the 'correct' method of doing the task. My research diary records how alarmingly hazardous this correct method is:

> Late in the shift, it's time to drop a line of heaters in Building 4. The drilling machine is readied and Greg and Fred start the job with me watching. Hopefully I can help somehow (I have my gloves on!). The first action is to remove the screw-in 'covers' of the valves with an adjustable spanner. The covers point downwards and are about two metres from the ground. So most are a good stretch to reach. If there is any liquid above the cover, it will try to drain down the inside of the sleeve of the operator who is reaching up.

The covers are successfully unscrewed and thrown on the ground. Next the machine is wheeled into position to begin the expected drilling. As soon as the drilling bit is inserted, an avalanche of steaming caustic liquid pours out of the valve and onto the ground.

The team moves slowly along the line of heaters. What is quite surprising about the process is what happens when the liquid is not held back by a crust of caustic and drops down immediately the valve is opened. The operator is standing right beside the valve and the avalanche falls without warning close by him. Sometimes it is mostly boiling water, when the heater has been recently cleaned by the process cleaners. Sometimes it is strong liquor. Either case, there is not enough time for the operator to get out of the way entirely, and the liquid sprays onto his overalls up to calf height.

What is also not expected is that after maybe 10 valves have been opened and drilled, the amount of liquid on the ground begins to rise like a tide. Perhaps it is too much for the sump pumps to cope with or perhaps the pumps are not operating properly, but soon we look around and Fred says: 'Better get out of here before we are cut off.'

In fact, we are already marooned. The blood-red steaming liquid is surrounding us. We have to pick our way through where it is shallowest, perhaps only a few centimetres deep, to dry land. And this is liquid which the company's regulations say we must wash off for 20 minutes every time it contacts our skin. Earlier I had picked up a hose with bare hands and found it was soapy, an indication it is covered in liquor, but I followed the example of one of the crew and washed my hands at an emergency station for a few moments until the soapy effect was gone. I was awaiting a stinging to begin, but it did not and next morning my hands look pink and normal.[119]

[119] Personal research diary 22 April 2002.

CHAPTER 6:

MANAGERS, FOREMEN AND WORKERS

'Drilling machines fucked' is written on the whiteboard in the crib room of Southend 1. Needless to say, this statement causes ironic comments by everyone.[120]

The previous chapter analysed how the messages about safety which reached the shop floor were both amplified and distorted by the culture which prevailed there. This chapter analyses how the messages were also affected by the hierarchical nature of their dissemination. The situation of the drilling machines I described at the end of the previous chapter illustrates how hierarchy, safety and communication interacted in a relationship which was complex and sometimes sensational.

The whiteboard note above was a highlight moment in an event which consumed the supervisor-worker relations in Southend 1 while I was there, and continued long after I left. It epitomised a saga of conflicting perceptions and soured relations. The note was written by a member of the outgoing shift previous to our shift. Normally, notes on the whiteboard consisted of more restrained information regarding the status of equipment or tasks for the benefit of the incoming shift. This time, however, the language signified a lot more than technical information. It signified solidarity among the crews in their resistance to a new work practice which had been imposed by the Southend manager. It signified that the workers had not been defeated. My crew received the news with pleasure.

THE WAR OF THE DRILLING MACHINES

The war of the drilling machines began towards the end of 2001. Charlie Rogers, a Safety Co-ordinator, told me of a current stand-off in which a traditional and apparently hazardous method of performing a specific task was to be outlawed.

[120] Personal research diary 12 April 2002.

A new initiative of the Southend management team and himself aimed to ban the practice called ‘rodding’, the use of cast-off pieces of angled pipe to clear encrusted liquor from ‘gemini valves’ at the base of heaters. There are more than 100 heaters on site, circular vessels of varying sizes laid out in rows somewhat above head height. The heaters are filled with steam and have pipes running through them carrying the liquor which is progressively heated to about 145 C. Whenever heaters suffer faults (or are due for cleaning), it is necessary for them to be taken out of service and the base removed so that workers can go inside to fix the problem or clean them. Removing the base is known as ‘dropping a heater’. The gemini valves are located in the base of the heaters for the purpose of draining the liquids.

Two groups of Southend workers are involved in undertaking this task: the operators and the process cleaners. The job of the operators is to drain the liquor from the heaters through several gemini valves, and of the job of the process cleaners is then to remove the bases and clean them. My research diary recorded the first skirmish in the war of the drilling machines:

> Before the operators can safely drop the heaters, they must confirm that there is no hardened crust of caustic material inside the opened gemini valves. If there is, an amount of hot liquor might be trapped inside the heater, which would be dangerous for the cleaners. So for years the operators have poked right-angled rods up into the valves to feel if they are clear or not. If they are not clear, the operators bash the rod with their 7lb hammers till the crust breaks and then they stand back for the liquor to gush out. Depending on the height of the valves above the ground, the operators might have to stand on wheeled platforms to do this work.
>
> Recently, there have been several developments in this operation. One is the introduction of drilling machines which are to be used instead of the rods. Another is the introduction of ‘safer’ platforms which are fitted with fences. The existing platforms have no fences and are probably in breach of working-from-height regulations even though they are only just over a metre high.[121]

Charlie Rogers told me that the existing method of clearing the gemini valves using the angled rods was no longer acceptable on safety grounds and was to be banned. He believed that using the rods was a procedure developed informally by the workers themselves and that the opportunities for suffering injuries from the liquor

[121] Personal research diary 21 December 2001.

were considerable. He indicated that this was a kind of test-case for him. He knew there was already some grumbling about the introduction of both the drilling machines and the new platforms. He said the operators thought the drilling machines were unnecessary. They would complicate and lengthen a job that was quite safe, in their view. Some did not like the new platforms either. I heard operators make the same comments to me directly:

> The workers see it differently [from management]. They claim that there has never been an incident with the rods, but that the replacement system is actually hazardous. This is because, firstly there is only one drilling machine and it is broken. Secondly, the machine is too big to go under many of the heaters to do its job. Thirdly, the new platforms make it very hard to swing the hammer to hit the rods [where it is necessary] because of their enclosing sides. An operator Paul takes me to some places where the drilling machine would not reach and, when I asked him what happens to the rule of not using the rod, replies that management has to turn a blind eye.
>
> Paul then demonstrates the use of the rod.[122]

The Southend 1 supervisor, Mark Dawson, openly disputed the operators' argument that the rod method was safe enough. There had been injuries which were covered up, he believed. 'When you do the investigation, it all comes out of the woodwork. What you find is that they're not reporting them, and that's part of the culture'.[123] A long-serving Southend 1 worker said Mark was wrong in this belief. Mark had given the operator three options: use the drilling machines, or attach bore water hoses to the valves and flush out the valves (which would clear the crust and also dilute the liquor) or , if the operators encountered valves which were broken or too encrusted, call on specialist contractors who had more sophisticated equipment to drill out the valves. Mark believed, however, that the operators preferred to put themselves at risk: He complained to me: 'One fellow hurt himself the other day by knocking himself with the rodding hammer and got splashed at the same time because he didn't move quickly enough.'[124]

This is how the war began. There were already several aspects of conflict evident in this story. One was the operation of informal judgment by workers of what

[122] Personal research diary 21 December 2001: Paul was a member of a different shift from my shift.
[123] Interview with Mark Dawson 6 February 2002.
[124] Interview with Mark Dawson 6 February 2002.

was safe and what was not. Another was their resistance to new methods. To judge by their comments, nothing was right with the new system, although the operator Paul showed me the new prototype drilling machine and described it as 'pretty clever'. It was air-operated and consisted of a 20mm drill bit mounted at the end of a two-metre arm which pivoted at its centre point. The whole thing was mounted on a three-wheel dolly. It was painted bright yellow and for the first few months it broke down continually. A third aspect was the banning of a previously accepted work method without a replacement method ready to take over. A fourth aspect was the creation of informal rules by management: in this case, there needed to be an informal rule to accommodate the situations when the formal rule (Do not use the rods) could not apply because the drilling machine would not reach heaters. The driving factor, increasingly lost sight of in the developing friction between operators and Southend management generated by these four factors, was Management's belief that there had recently been an increasing number of caustic-burn injuries associated with the practice of draining heaters using the right-angled rods, and their desire to avoid injuries.

Mark Dawson expressed it this way in a message to foremen when he was campaigning for the change:

> While this may be a dramatic change for some, this should be welcomed by the majority of crews who have been screaming for us (by us I am referring to the leadership group – manager, supervisors, foremen and day co-ordinators) to do something different to ensure safety.[125]

Nothing much changed for three months. In that time the number of drilling machines had risen to three and were constantly breaking down. The operators were still hammering their rods into the gemini valves. The Southend manager began putting serious pressure on the crews to use the drilling machines. Then news reached me that the new machines had had their compressed air hoses cut off and stolen. They were now out of action. No one seemed prepared to concede that this was sabotage, nor did anyone deny it, but the drilling machines were now at the centre of conversation all over Southend. A week later, there was a new front in the war between management and crews. A dispute erupted between the Southend

[125] Personal research diary 26 March 2002.

manager, Gary Harnett, and a member of the Training Department, Frank Brown, over the fact that the new drilling machines created a need for operators to wear protection against being splashed by hot liquor. Splashing was the issue which the machines were intended to solve. Gary, the Southend manager, had instructed that wet weather gear (plastic rain coats) should be worn, but Frank argued that wet weather gear was designed for rain protection, not chemical protection. Then Frank sent an open e-mail to Gary saying that wet weather gear was not approved protection and was not acceptable for this job. The fact that this e-mail could be read by everyone in Southend made this an act of open rebellion. Gary's response was not only to disagree with Frank, but also to order him not to rebel. He sent an open e-mail to Frank:

> Sorry but I beg to differ – wet weather gear is entirely appropriate for the duty we have specified – ie to prevent splashes to the person. This duty [sic] is widely used across sites for this application and it is not meant as a full chemical burns suit. If you have any further concerns please see me directly rather than sending out notes such as this as this note is confusing to our guys when the instruction is very clear.[126]

Frank later confided in me that he was 'going to win this one'.

* * *

A further week later, I was with my crew. The operators were trying to get one of the new drilling machines to work. Three of them were poring over it, using a level of mechanical proficiency they were certainly not employed for. In the end, the drill bit would not rotate, so one of the operators resorted to banging the drilling bit up into a gemini valve as if it was an angled rod, which brought some wry smiles to the group. Even Frank took time out to see what the problem was and ended up frustrated at not being able to make any of the machines work. No drilling was done at all on that shift.

The next day, one of my crew member informed me that there was a new directive that rodding could be done in special circumstances but only accompanied by special paperwork which only the foreman was qualified to complete. Rodding resumed. We were also informed that a mechanical apprentice had been assigned to fix the machines, and had been forbidden from going home until he had. We never

[126] Personal research diary 26 March 2002.

saw the apprentice, nor were the machines fixed during that shift cycle. When we returned from our 6-day break for the next shift cycle, my crew was informed that all the drilling machines were repaired and working properly. We saw them in the distance in the heater building, cleaned up and looking nice. Then the crew noticed the whiteboard note ‘Drilling machines fucked’ in the crib room. Needless to say, this statement caused ironic comments by everyone.

Later that day, the maintenance department sent over a young graduate engineer to attend to the issue of getting the machines working. He was a thin and vulnerable-looking young man with a label saying ‘Jeremy’ on his squeaky-clean, unmarked hard hat. Apparently, he had just joined Orco and he was totally unprepared for the verbal pasting he received from Fred and Darren when he arrived in the crib room. They blamed him for everything that had gone wrong with the drilling machines. (I had got to know Fred and Darren well enough by this stage to recognise how accomplished they were at such verbal assaults. It was like a well-rehearsed stage performance, and I could recognise some of the rhetorical techniques they used. Jeremy did not know this and I could see the poor young man wilting.) Fred, Darren and I accompanied Jeremy to the machines and began tinkering, but after an hour we abandoned Jeremy to it. As we left work that evening we saw him in the gathering darkness, bent over a machine.

Rodding continued, mostly without the required paperwork. Some days later, we arrived on an evening shift to learn that the day crew had successfully drilled out several valves with one of the machines. That night, we did, too. But the issue of the protective clothing remained unresolved. For the moment, the operators either wore it or not, as they wished. By August, ten months after the war began, not only members of Southend, but representatives of protective clothing manufacturers and the medical centre were still heavily embroiled in this unresolved matter of protection from liquor splashes. It took until the following July, more than 18 months after the war broke out, for peace to be almost restored. All the operators on all crews seemed to be using the drilling machines, whose technical problems had been fixed, but not all of them were wearing the required wet weather protection. It may not have been total peace, nor was it total war any more. It was an armistice.

The fact that some of the war of the drilling machines occurred during my time in Southend raised in my mind the possibility that I had played a part in it.

Perhaps my presence had intensified the operators' rebellion, in that they had a new audience to play up to; an audience who they knew was making notes of the events. I did not hide my interest in the events because I made a point of talking to a wide range of people about them. I believe I might have influenced some small incidents – such as Fred and Darren's verbal assault on Jeremy – but not the main events or the course of the war. The two sides had taken up their warring positions before I was intensively involved in Southend 1, and continued afterwards. Secondly, several crews actively participated, not just mine. Thirdly and most importantly, this was serious conflict, not a game. I don't believe that the presence of an enquiring outsider distracted them from the focus on the war at all.

* * *

The shop floor workers in Southend 1 were not clear about who constituted 'management'. Possibly the uncertainty came from the fact that their managers were mostly younger than they were, or perhaps because the supervisors, the first level managers, seemed to encourage a dialogue of being equal with the shop floor people. Mark Dawson once explained to me that his 'man-management' mission was to blur the distinction between him, the foremen and the crews. He wanted the crews to take more responsibility for finding solutions to problems, rather than always pushing problems up to him to solve. However, the crews' perception was that a supervisor was 'management' and therefore was paid to solve their problems should they decide it was necessary. Moreover, the crews seemed unwilling to become problem-solvers until some important issues which *they* wanted addressed were fixed.

Although the position of the foremen has been seen as the lowest rung of 'management' by researchers (for example, Harris, 1987; Nichols & Beynon, 1977 in their research of the Riverside works), it was not so clearly defined in the minds of the workers at the refinery. It seemed to change from crew to crew and from moment to moment, an indication of the fluidity and multi-dimensionality of relations on the shop floor. Sometimes the foremen were 'management' – as when the men took task instructions from their foremen – sometimes they were 'us' because they had been 'one of us' in the past – as when the workers felt entitled to challenge the foremen's instructions. I felt that the workers mostly had a deep respect for their foremen which they camouflaged with affable banter and ribbing. Sometimes, this relationship was

strained due to difficulties with the plant, the tiredness of the workers or personal problems:

> Today, the trainee foreman Bert Entwhistle comes into the operators' crib room about seven minutes before the end of the shift, when all the crew are sitting round, the floor cleaned and the room tidied up for departure. He explains, somewhat defensively, that a problem needed fixing because it is 'costing the company heaps'. George Christo leads a brief whinge-banter discussion but eventually agrees to do the job. To my surprise, after Bert departs, George tells me that his 'yes' was just to get rid of him and they will not be doing the job. And they don't. I am surprised by this because not only is it defying a direct instruction from the foreman, albeit a trainee, but it is also imposing on their mates of the next shift.[127]

When I raised this with Bert next day, he explained that George could be reported but that Bert had let it pass because of the greater need to maintain working relations with the crew. In fact, I witnessed only one example of a serious clash between crew and a foreman and it was not in my crew:

> As Kevin Rumer and I entered Building 3X, we ran into his foreman Malcolm who immediately got into a spat with Kevin about a valve-grinding job which needed doing straight away rather than later, as Kevin judged it could be. It seemed that Kevin was not involved in the delay but Malcolm reacted angrily and indicated that he did 'not fucking accept it' and he would be doing something about it. Afterwards, I observed to Kevin that Malcolm was an old fashioned sort of foreman. He complimented me on this accurate judgment and laughed.[128]

Child (1977) noted that 'manager' can refer to the task a person performs or the location within an organisational hierarchy but that, in any case, the real significance of the designation lies in the person's 'location' in the cultural value system of the workplace. This is augmented by the person's background features including education and professional training, and his or her *de facto* place in the network of activities and relationships in an organisation(p. 146). At the refinery, this location was reflected in the occasions when the shop floor workers interacted with their foremen, supervisors or managers on operational matters (rather than chatting socially) which seemed to be highly productive. The toolbox meetings involving my

[127] Personal research diary 1 April 2002.
[128] Personal research diary 8 March 2002.

crew and our foreman, Chris Jones, contrasted with the meetings with the supervisor, Mark Dawson. Both kinds of meetings contained considerable repartee, much of it teasing at the expense of the foreman or supervisor. (There was another form of behaviour which I have called 'whinge-banter' in which the teasing was less humorous and was directed at the organisation generally. This served to put the onus upon the foreman to identify either with management or with them, which I thought demanded considerable interpersonal skills to resolve satisfactorily – most often through identifying with management.) However, it was noticeable at the toolbox meetings with the foreman that the crew would come to order of their own accord and, eventually, complete the agenda of matters requiring serious discussion. At the supervisor meetings, it was the supervisor who had the task of bringing the meeting to order – the workers were not inclined to do any of his work for him. They took more seriously the task of 'giving him a hard time'.

* * *

There are many levels of significance in the differences between the shop floor, foremen, middle-management and top management? Thirty years ago in Australia, Sinclair (1979) conducted a large research project to attempt to identify the psychological dimensions of employees which would illuminate these differences. He researched more than 2,236 employees – about half being in mining and the remainder in workplaces varying from shops to government offices. He used eight psychological dimensions, which he had previously identified, to demonstrate large differences across workplaces:

1. Progressive/Conservative
2. Independent/Conformist
3. Open-minded/Dogmatic
4. Flexible/Inflexible
5. Concerned/Unconcerned about others
6. Feels/Does not feel hostile
7. Expresses/Does not express hostility
8. Trusting/Mistrusting of others

Except for dimensions 4 and 6, Sinclair found top managers and the shop floor to be widely separated: shop floor workers being the least politically and socially progressive, the most conformist and dogmatic, the least concerned for others, the most expressive of hostility after union representatives, and the most

mistrustful of others equally with their foremen. In dimensions 4 and 6: the shop floor workers were much closer to top management.

This research was partly supported in 2001, when 4,700 employees of the mining industry in a selected part of Australia were surveyed about their perceptions of safety in their workplaces (MOHSAB, 2002). The employees were from all levels of their organisations' hierarchies and represented about 14% of the total population of mining industry employees in that locality. Overall, the results for the alumina sector (in which Orco is a major participant) were close to those of the whole mining industry and demonstrated a wide divergence in perceptions about how safety is managed in their organisations. The survey results are striking in indicating how far the shop floor perceptions diverge from top management perceptions. Of the 40 questions asked in the survey, shop floor operators/trades people scored their organisation unfavourably in 38 questions by a margin of at least one standard deviation from the mean. Top management scored their organisation favourably in 39 questions of the 40 questions by more than one standard deviation from the mean. Some relevant questions are illustrated below:

Table 4: Perceptions of safety of mining industry employees

Statement*	Operator/ Tradesperson**	Top Management**
Supervisors ignore risk-taking behaviour	22.0	8.5
Safety issues raised with supervisors are adequately dealt with	74.9	94.7
Employees take short-cuts to meet production demands	47.7	27.6
Employees are discouraged from reporting/bringing safety issues to the attention of management	14.2	4.0
Employees have been properly trained to perform their assigned tasks	71.5	89.7
Employees behave unsafely and take risks at work	23.4	9.5
Safety bulletins and safety incidents are discussed at toolbox/safety meetings/pre-shift meetings	89.9	95.5
Managers are skilled and competent to ensure the safety of their employees	79.2	95.8
Employees are routinely involved in the development of (safe) work procedures	76.4	93.4
Up-to-date (safe) work procedures are available at this site	83.0	88.3
The work practices in my workplace are not the same as the written (safe) work practices	39.2	16.4
Employees are routinely involved in incident/accident investigations	56.7	86.5
Managers do not spend enough time speaking with employees about safety	39.8	28.1
Safety and health representatives are effective in representing employees on OSH issues	77.3	84.1

* Selected from 40 statements in the survey administered by MOHSAB
** Scores are the percentages of respondents who agreed or agreed strongly with the statements.
Source: (MOHSAB, 2002)

The survey is informative about the industrial subculture of the bauxite mining and alumina processing sector of the mining industry in which the Orco refinery plays a significant part. The survey population were a good representation of the employees of the refinery.[129] Their responses showed that these employees

[129] 60% of the respondents consisted of process or smelter/refinery workers and 83% were direct employees (rather than contractor employees). The length of employment was 11.4 years (Appendix p. 42).

perceive their workplaces undertook the formalities better than average but managed the human side of safety worse. The two statements: 'Employees take short-cuts to meet production demands' and 'Supervisors are skilled and competent to ensure the safety of their people' were poorly supported. Asked which aspect of safety at their workplaces they would like improved, they nominated better equipment, more resources and more recognition and management involvement (Appendix p. 54)

I argue that the significance of these two investigations is to confirm my finding that a wide gap may exist between the perceptions, attitudes and behaviour of shop floor and those of top management.[130] The first step for managements which desire to communicate well among their people is to be alert to the likely presence of a large gap and then to investigate the culture which lies on the far side of the gap. My present study of the Orco revealed the culture which prevailed on the refinery shop floor, but every workplace is likely to be different and the culture which I have identified may not be found elsewhere. When I showed the information from these two investigations to a selection of shop floor, union and management people at the refinery, their first reaction was mostly surprise: some doubted that such a range of outcomes was possible at their refinery but others thought the range at the refinery might be greater. Most also reacted with curiosity, expressing a wish to find out what the refinery's people were actually like, a reaction which I felt was the first step towards a deeper understanding of one another's working lives.

THE HIERARCHY: TOP MANAGEMENT

Currently accepted models of safety management emphasise the high importance of top management (Geller, 1999, p. 339). Not only does top management state and re-state the standards and targets for the entire organisation, it also establishes the safety climate in which work is to take place. An Australian government regulatory authority described the top management obligation in these words:

> Safety management is about a demonstrated commitment by the most senior people in an organisation to set safety objectives, oversee planning and implementation, consider feedback from performance reviews and continuously improve the system (WorkSafe, 2002).

[130] The reliability of the actual perceptions, attitudes and behaviour which the investigations purport to have found may be questioned, but this matters less than the size of the differences.

At Orco, the ‘most senior people’ were far away in Cleveland but their demonstrated commitment reached members of my refinery. The world chairman said during a television interview: ‘You probably can’t have a great manufacturing process… unless you have a really great human bonding. And the place to begin that is around health and safety’ (O’Neill, 1995). It was he who adopted the organisation-wide policy of zero injuries. Ted Connolly, a former operator and now a training officer with 25 years refinery service, knew about it. He said: ‘There’s a big push from Cleveland for zero injuries.’[131] Such messages from the top may not have reached the shop floor in the exact terms they were enunciated and even their intent may have been confused. A shop floor operator, Wayne Reid, acknowledged that this zero-injury safety message ‘came all the way from Cleveland. It reached the Refinery Manager alright, but after that the message got diluted.’[132]

Occasionally, the top message sender did have the opportunity of bringing his message personally to the shop floor. I asked my crew about whether the chairman of the company had visited them. In fact, several years previously, he had. Their impressions of the visit were that, in the days beforehand, the refinery was scrubbed up, and large pot plants were placed all around it including two just outside the Southend office building. Fred said: ‘He drove past at 60k when the speed limit is 20, and he didn’t talk to us. The pots were taken away before he’d even left the plant.’[133] It is likely that this chairman was not actually driving the car which broke the speed limit in the refinery, nor was it his decision about which employees he would talk to; but the man’s message about eliminating injuries seemed blighted by the event, in particular the workers’ belief that the world chief broke safety rules, and with apparent impunity.

The Southend manager was ‘tarred with the same brush’ of harsh judgment. At a toolbox meeting, during a discussion about safety breaches reported on the day’s topic sheet, an operator commented that there was no report of an incident in which Gary was caught driving his car without his headlights on. The mocking response among the crew illustrated how easily the good effects from the stated commitment to safety by management could be weakened by relatively trivial events. As a senior manager in the Safety Department, Franco Amalfi, said to me: ‘People

[131] Interview with Ted Connolly 22 January 2002.
[132] Personal research diary 8 May 2002.

still believe there is some lip-service in the [safety] expectations which management set, but if they were privy to senior managers talking, they'd understand that those expectations are set very firmly.'[134]

All this did not rule out top management making good and lasting impressions on shop floor workers. A member of the SMAC team, Merve Hicks, told me about the time when it was decided to change the policy on how the straps on goggle were to be worn (described in Chapter 4). The then Refinery Manager, Eduardo Marcuse, was sensitive to the response of the workers and took a long-term approach to achieving the change-over. He applied both persistence and patience, neither of which would have succeeded alone, Merve thought.

A safety consultant, Steve Bush, said:

> I believe [the crews] understand that [the company] has a commitment to safety that a lot of other workplaces don't. But I believe they are quite justified in their thinking that a lot higher priority is placed on safety when it suits the organisation. These priorities may be held by senior management but I believe that middle management choose to look the other way when people are attempting to do things quicker, to enable production to be maintained to a certain level. They don't pick up on guys doing the wrong thing until someone gets hurt.[135]

At the shop floor, workers tended to look behind the actions of management for underlying motives, or perhaps just different perspectives. Kevin Rumer said:

> Sometimes there is a bit of the division between management and staff. We have had jobs where the ergonomics are so ridiculous that not one occupational physiotherapist in the world would pass it. But we have to actually work that piece of machinery. Here's us having to 'wear our seat belts, have our goggles on and do all the little things correctly' but when it comes to a big job where you can get hurt, 'just do it boys. Do the job. You got to keep the thing online.' You can understand why some guys get really irate and say: 'No. I'm not touching it. I'm not playing your fucking rules here and doing all this other little shit that you want me to do. I should be really black banning this piece of equipment because it's too dangerous to work on'.[136]

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[133] Group interview 24 April 2002.
[134] Interview with Franco Amalfi 25 October 2001.
[135] Interview with Steve Bush 21 December 2001.
[136] Interview with Kevin Rumer 8 March 2002.

One matter which seemed to increase the division between management and the shop floor derived from the credentials of management to manage safety. No one in the two senior levels of safety management had any formal qualification or education in safety. (Nor of course did those above them.) Below the safety managers were the Safety Consultants who were all former shop floor people who had taken safety or human resources courses through technical college (except for the one who had a university degree in occupational safety and health.) So it appeared to me that the safety managers were less informed about issues than their Safety Consultant staff. This may be acceptable in organisations where senior managers apply generic managerial skills to directing those with specialists skills below them in the hierarchy. At the refinery, however, not only was there a lack of specific knowledge about safety at these top three levels of management, but I could also see that these managers were making decisions about shop floor safety which were beyond the limits of their knowledge. For example, I once observed a Refinery Manager at a safety meeting attended by all levels of staff including shop floor people. For most of the meeting, he listened to the conversation without contributing; but occasionally would make a somewhat imperious directive such as 'Do it!'

At most such meetings, I noticed that the understandings of these managers were manifestly cursory and that their solutions were primitive. The Refinery Manager once called for less 'bureaucracy' in the way safety was managed at the refinery, yet safety is one of the most heavily regulated functions of corporate business. These observations are congruent with what I referred to in Chapter 4 as a generalised managerial belief in what Reason (1997) termed 'the person model' of safety causation. (His other categories of causation are engineering and organisational (p. 224).)[137] Reason claimed that the person model was widely 'seductive' to industrial organisations because it played to the strength of most senior management – people management – and avoided their comparative weaknesses in

[137] Reason was writing about high-risk industries, which alumina refining certainly is, and the relatively rare catastrophic accident. However, I argue that his three-model categorisation of accident causes is also applicable to non-catastrophic accidents because the kind of sequences of events leading to both accident types is similar.

interpreting organisational factors and, to a lesser extent, engineering ones (p. 230). Simard and Marchand (1997, p. 172) also noted a misguided belief in the person model among many practitioners of workplace safety.

In contrast, Hofmann and Morgeson (1999) saw top management as indulging in an over-emphasis on the engineering model (which is partly attributable to their experience of the USA where safety practitioners have historically been titled 'safety engineers'). They argued that organisations should move on from this preoccupation: "Although safety has historically been viewed as an engineering problem, researchers are increasingly acknowledging that organizational factors play an important role in workplace safety" (p. 1). Pidgeon (1991) criticised the use of the term 'human error' in findings about industrial accidents, typically large-scale ones such as the 1998 Esso Longford gas disaster in the Australian State of Victoria. Pidgeon said that what should be implied from such accidents is not the fault of individuals but the pre-existing conditions of disaster typically embedded in the social and organizational arrangements of such workplaces (p. 131). The Longford disaster, in which two operators were killed, illustrates how organisational factors are often central to the occurrence of accidents, but go unnoticed (Hopkins, 2000). Esso attributed the cause of the accident to operator error. Six months before the Longford disaster, the plant's safety management system had been audited by Esso's parent company, Exxon. "They gave Esso three out of four on some of the criteria and four out of four on others. Essentially this was an all's well message" (Hopkins, 2003). However, the Royal Commission into the causes of the disaster looked beyond operator error and found eleven major organisational causes and three corporate ones. Rectifying any of these would have prevented the accident. The causes were:

1. Engineers located off-site
2. A focus on inappropriate measures of safety
3. Poor auditing
4. Poor engineering design
5. Poor supervision
6. A maintenance backlog
7. Failure of the incident reporting system
8. Failure to perform a required hazard and operability (HAZOP) analysis
9. Operators being allowed to operate the plant in the 'alarm' mode
10. Poor shift handover procedures

11. Poor maintenance priorities
12. Inadequate procedures and training
13. Failure to identify interconnecting hazards
14. Cost cutting
15. Failure of worldwide control by Exxon (Hopkins, 2000, p. 122)

At the Orco refinery, the seduction of the person model was evident in the focus on changing the workers' 'safety culture'. The simultaneous adoption of a behaviour-based safety approach, which I touched on in Chapter 4, confirmed this impression. This approach is currently very popular in the professional literature of workplace safety (Simard & Marchand, 1997, p. 183) and in workplace programs. The engineering model was also embraced by the refinery because it seemed to play to the organisation's other strength: its depth of engineering expertise. However, that left unexploited the one approach which Reason argued was the most important contributor to the understanding of the causes and prevention of industrial accidents: the organisational approach. The workers themselves were aware of organisational factors behind the hazards they faced, but top management appeared far less so. The war of the drilling machines was a salient example. The Southend managers believed that banning the 'dangerous' practice of rodding would make the operators safer but did not provide either the machinery or the social apparatus for the ban to succeed. Dwyer (1991) created the term 'socially produced error' to describe this type of situation and to emphasise the socio-organisational nature of safety.

I observed occasions when socially produced error was manifested not in an injury but in pollution. Once, my crew received a severe reprimand (and narrowly escaped being formally disciplined) for allowing caustic to discharge from a bunded area. The direct cause of the caustic discharge seemed to be inattention of the operators but the operators complained loudly to the foreman, Chris Jones, that the equipment was old and defective, making any preventive action almost impossible. The confrontation about the pollution reprimand triggered a fresh argument in the crib room about their being required to avoid accidents without being given the capability of doing so.

However, the differing opinions between top management and workers over perceptions of unsafe (or polluting) equipment was not always confrontational. Both parties told me how problems had been fixed at workers' request, sometimes at

considerable cost. One business centre manager, Joshua Black, gave one example, albeit of a hazard he himself had identified:

> I was observing a particular job and I was horrified by the way it was being done. So I put some steps in place [to rectify it] so that 12 or 18 months later we've probably spent $150,000. We've got another $300,000 to spend on equipment which will eliminate that hazard for ever.[138]

He then explained that he made sure that this initiative was widely communicated, because it would demonstrate the company's commitment to safety. He described this as a 'subtle part of the communication process'.

An operator who worked in Black's part of the refinery seemed to acknowledge such examples of harmonised thinking when he said to me:

> I understand that a lot of these things we want done cost a lot of money and it's hard sometimes for the managers and supervisors to fit it into their budgets. But as long as we can see some sort effort being made to try and rectify it, even if it is minimal, even if it is just put on the maintenance plan…[139]

However, I found that this attitude was a 'high-point' in the relationship between the shop floor and management over perceived hazards. Overall, the shop floor workers resented the company's lack of appreciation of the organisational factors behind the hazards they endured. Kevin Rumer reported to me the kind of language used by his crew when they confronted management about one piece of machinery which they had resolved not to use:

> We've had enough. We flagged it so many times to you guys and still nothing has been done about it. How much further do we have to go? How many more years do we have to work on this piece of equipment before you actually do something? So, stuff yous. We're not going to work on it. It's about time you changed it. You're not listening to us. Do something about it.[140]

The staff newsletter illustrated how the refinery's communication could exacerbate these divergent approaches. Almost every edition of this publication carried one or more stories about how shop floor workers or their Safety Co-

[138] Interview with Joshua Black 12 March 2002
[139] Personal research diary 8 March 2002.
[140] Interview with Kevin Rumer 8 March 2002.

ordinators identify hazards or suggest safety improvements, and how the company endorses their ideas and makes available the resources needed to fix the hazards or implement the ideas. An example was a story headlined 'Shining lights' about a crew who initiated a project for better night-time visibility for workers. The story began:

> The Safety Representatives across site on Shift [X] have become shining lights for safety, in more ways than one.
>
> After forming a team, they decided that working on night shifts had a whole range of safety issues in itself, which was worthy of their attention.

The operator, Eion Muffett, told me how far from the truth he believed this story was:

> People are well aware of the true process when someone has a good idea. The reality is much more like: 'Don't be ridiculous, it's going to cost a lot of money.' And then the conflict starts.
>
> An example of that was a guy in Southend 2 who was promoting high-visibility stuff, harness, lights and so forth. There was an enormous amount of conflict behind that. But when you read the newsletter it says: 'Trevor had a really good idea, and was really concerned, so this is what he did about it and he got full support'. No he didn't. He had to beat his head against so many brick walls and people slightly less stubborn than he was. It was only his sheer bloodymindedness and his belief in what he was doing that carried him through.[141]

While believing otherwise, top management was presiding over an approach which was certain to alienate the shop floor workers and perhaps increase their hazards. The internationally respected safety authority, E Scott Geller (2002), who has been used as a consultant by the refinery, expressed the situation this way:

> The line workers or operators are the true safety experts of a work setting. They know where the daily hazards are located, and they know what to do to avoid them. They also know who takes risks, and with proper training, they could be most effective at increasing these people's safe behaviour and decreasing their at-risk behaviour.

[141] Interview with Eion Muffett 15 May 3002.

While top management failed to acknowledge the potential contribution to better safety from the workers' perception of organisational factors, and the frustration that this created, its failure seemed more to result from ignorance than ill will. Top management's attitude contrasted with what Kriegler (1980) found at the BHP Australian shipbuilding and iron ore processing plant in the 1970s. Kriegler described how the company improved its statistics of lost-time injuries by techniques such as bringing injured workers back to work on light duties at the earliest opportunity, even when they were in great pain or virtually incapacitated. Kriegler was angry that the company was simultaneously publicising its accident statistics as being well below industry levels (p. 48). At the refinery, top management readily lamented the frequency of incidents and injuries. At an annual safety strategy meeting, the safety manager remarked that 2001 had been a 'lucky year for safety'. He said there could very easily have been fatalities. One operator might have been killed in a fall, due to working outside guarding. Another had been struck a glancing blow by a piece of crane weighing several kilograms which fell from a height. Two contractors working on conveyor belts in Southend were also very lucky that they did not injure themselves in falls.[142] Whereas Kriegler and his workmates found BHP disingenuous, I believe the workers at the refinery saw statements of management dissatisfaction about accidents and incidents as indicators of sincere concern for the safety of the workers.

On the other hand, most of the workers I spoke to believed that the top managers were paid a bonus for achieving good accident and incident statistics. The foreman, Ben Clifton, said: 'There is some feeling [among the workers] that management is paid according to the safety outcomes, or penalised if there are incidents. That's why they don't want us to have incidents.'[143] A member of the SMAC team, Kyle Isaacs, said: 'The managers' salaries are tied into the safety statistics. So obviously the worse the safety statistics are, the less pay they are going to get.'[144] In fact, all staff were eligible for proportionate annual bonuses calculated on a range of outcomes, including production levels and safety performance.

* * *

[142] Personal research diary 15 February 2002
[143] Interview with Ben Clifton 8 February 2001.
[144] Interview with Kyle Isaacs 25 October 2001.

Numerous studies have demonstrated the important role of formalised communication in establishing an organisational climate which positively affects workplace safety (Erickson, 1997; Geller, 1999, 2000; Hofmann, 1996; D Zohar, 1980). Thompson, Hilton and Witt (1998) summarised these studies: "Management can communicate what is important in explicit and tangible ways by stating goals, rewarding job behaviors, establishing policies and procedures, and so forth" (p. 16). An early study by Zohar in Israel (1980) found that two outcomes of communication – workers' perceptions of management's attitudes to safety and their perceptions about the relevance of safety in general production processes – were the two dimensions of highest importance in determining the level of safety climate.

However, the value of top management communicating its commitment to safety can readily be confounded by other factors within management's control. As I have noted above, the communication must be credible and consistent. Otherwise, its safety benefits will be reduced or negated. The workers at the refinery made their determination about each individual Refinery Manager. Several of them singled out one manager from a number of years earlier. A safety consultant, Roy Levinson, said of this manager:

> I think he has done more for safety here than any of his predecessors or people since him – he had a passion about safety. He was a hands-on person. You would be more likely to find him out walking round the refinery, talking to the guys on the shop floor than in his office.[145]

A second factor is that formalised communication by top management (even if consistent) may not be the strongest influence on desirable shop floor qualities such as safety climate. An elaborate investigation by Simard and Marchand (1997) into one desirable outcome of safety communication – compliance with safety rules – found little to encourage complacency in safety management. Simard and Marchand were looking for the factors which influenced the propensity of workers to comply with safety rules. The factor of perception of top management's commitment to safety did not reach the level of statistical significance in influencing workers' propensity to comply with rules (p. 184). Instead, it was the social relationship variables at the shop floor that were the best predictors of this propensity (p. 172).

[145] Interview with Roy Levinson 18 January 2002.

These variables mainly consisted of the relationships between foremen and their shop floor teams and between foremen and their own immediate supervisors.

In all my investigation of top management's contribution to safety and safety communication at the refinery, two secondary features I have not yet discussed caught my attention. One was a degree of amateurism or laxity, and the other was a tendency to fads. I felt these two features interfered with top management's ability to communicate its commitment to safety. The amateurism or laxity manifested itself in small and big ways, some of which I have previously noted: I attended safety planning meetings involving the Refinery Manager and his senior managers at which participants were confused about the agenda, the location of the meeting and even the start time. Workers were not given training which was specified in the annual training plan. A training manual used by my crew members was alleged to be '20 years old' and severely deficient in the set of duties it described. The notice board adjacent to the crib room marked 'Safety Information' contained 'Health and Safety Rules' dated 1997 (this was in 2002), signed by a Refinery Manager four previous to the present one. The person newly appointed to the job of managing internal communication had no training or experience in this role, having previously been a tour guide at the company's mine. Some of these examples were detected by a major Orco audit which was held about the time I finished researching the refinery, including the training and the safety notice boards. I was not able to explore whether this characteristic was repeated in more significant ways in the refinery. I suspected that it did. However, in writing of the official inquiry into the Longford gas disaster, Hopkins (2000) argued that even large companies like Esso can show an apparent laxity in major ways. In this event, Esso's top management had adopted culture as the key to safety yet had not addressed its own culture by fulfilling the commitment which that culture entailed (p. 76).

The tendency to fads was acknowledged by nearly everyone at the refinery. The company had numerous change programs in progress while I was there. The middle management people (including foremen) found them annoying because they came and went so frequently. The shop floor people tried to ignore them as best they could. Each program had its own acronym and all were treated warily by shop floor people. Geller (2002) described how such programs work:

> Consider how safety programs are typically introduced to potential participants. A corporate official (often a safety director) learns about a new safety program at a conference or in a promotional flyer and orders the appropriate materials, including workbooks, videotapes, and a facilitator's guide. Sometimes an outside consultant or trainer is hired to teach the new step-by-step procedures to certain personnel. Then these employees demonstrate the new procedures to others while on the job, and thus a new safety program is implemented plant-wide. But to many this is just another set of temporary procedures which attempt to reduce outcome numbers (recordable injuries) and make management look good. It is commonly believed that the new program won't really work to reduce injuries, and therefore it won't be long before it will be replaced with another 'flavour of the month'.

The Safety Consultant, Steve Bush, said about such programs:

> It's a full-time job just keeping up with them. Are people positive to them? Not really. Historically, a lot of these things which come down the line have been flavour of the month, and shop floor people now become very cynical.
>
> Because of the long time that the [shop floor] employees have been here, they have seen all these things come and all these things go. I can understand them becoming cynical and saying 'We don't need to pay much attention to this' because historically they have been proven correct.[146]

The Southend 1 supervisor, Mark Dawson, agreed:

> There are so many [programs] coming through. They are so similar but they put a different title on them, a different badge, different people driving them.[147]

Merve Hicks, a member of SMAC, told me how he was compromised by 'fadism'. Several years earlier, he had been a member of a special implementation team for a program titled 'safety maturity road mapping'. When briefing a group of sceptical workers about this program, he was made to promise that the program would certainly last. But the program soon faded, and Merve now thought back with disillusionment to that promise. He was then caught up in a new program called 'operational hazard analysis'. This, too, involved all the rigmarole of promotion, training, team-leadership and pilot-testing, and had already 'pretty well run its

[146] Interview with Steve Bush 21 December 2001.
[147] Interview with Mark Dawson 6 February 2002.

course'. When I spoke to him two years after its introduction, he was not sure whether he was still required to act on the program. There was a standing directive from management to perform an operational hazard analysis on any new piece of equipment. This was code for 'we've dropped it', he believed.[148]

Mansdorf (1999) noted the current tendency of companies to try a succession of new programs for improving safety, especially in companies whose safety performance no longer responds to initiatives. He argued that successful safety programs had to be accommodated within the values, behaviour and practices of the workplace. If they did not enjoy the confidence of management and workers, they could not be truly effective (p. 110).

The refinery's Health and Safety Supervisor, Andrew Smith, agreed that the programs and management systems which come from Cleveland harmed middle management's ability to lead people.

> They have impacted probably more on the front line supervisory person who has had to take the load, which has negated his effort to communicate with his own workforce. The foreman has to take a lot of those systems – procurement, incident management systems, etc – but he also has to manage his work crew as well and achieve production.[149]

One result of such 'fadism' was that the workers seemed to find it hard to distinguish serious reform from game-playing. When I discussed with a training officer the impending 2003 Challenge program of refinery reorganisation and job cuts, he commented that no one was 'getting excited about it because they had all seen it before, and it was probably just another management fad'.[150] He was wrong about this one. It was for real.

THE HIERARCHY: FOREMAN

The effect of communication on the working relations of the shop floor has been investigated with respect to dimensions such as job satisfaction (Trombetta & Rogers, 1998), interpersonal communication (Weick, 1983), commitment (Guzley, 1992), sense of involvement (Simard & Marchand, 1995) and productivity (Downs,

[148] Interview with Merve Hicks 4 February 2002.
[149] Interview with Andrew Smith 8 July 2003.
[150] Personal research diary 9 January 2002.

Clampitt & Pfeifer, 1988). As suggested above, the quality of leadership by foremen has emerged as a critical factor in many of these dimensions. Communication between shop floor workers and their immediate superiors (including foremen) has been found to affect factors such as employee productivity (Clampitt & Downs, 1993, p. 6), employee satisfaction (Gamble, 1999, p. 262) and worker sense of involvement (Hofmann, 1996, p. 308). On the specific subject of safety, Pettinger,

Boyce and Geller (In press) found that when workers were consulted about a proposed safety process there was a better outcome than when they were not consulted. Where it is necessary for values of work to be strongly communicated through the leadership process, foremen are pivotal. I have earlier described how foremen encountered a degree of rejection by their crews of information which they were required to pass on. I found that the foremen's freedom to show leadership was being circumscribed. One reason was that they – and all middle managers at the refinery – were suffering a loss of autonomy because of the prevalence of change programs which demanded standard actions across Orco. Matt Barnard described how this occurred:

> We recently did quite an extensive mobile equipment and forklift [safety] program and a month after we'd finished, we had a program sent to us from Cleveland saying 'You will all do this'. In fact, we felt that the material we had presented was probably better. But we had no choice. We were given a very clear directive.[151]

I believe the foremen were also suffering a loss of autonomy because of Orco's policy of setting parameters of performance for all the refinery's functions, and of regularly auditing these parameters. Passing the audits had become an important managerial objective in itself. Preparation for the major performance audit of safety and health in 2003 involved 60 people at the refinery for a full year. Cleveland had established certain parameters for the conduct of activities, and this preparation for the audit involved bringing the refinery into line with Cleveland's parameters. Some of the parameters were based on outcomes, such as nominated levels of safety performance. These outcomes had the advantage of allowing local refineries some flexibility in their achievement. Most of the parameters of the audit were process parameters, however. They pre-determined the methods of achieving

[151] Interview with Matt Barnard 8 July 2003.

the outcomes. For example, one performance indicator was that there should be articles promoting safety in every edition of the staff newsletter. A consequence of setting such parameters was to cement in place a kind of curriculum of approved conduct. It did not seem to matter that the articles may not be read. It seemed to me that foremen and supervisors felt constrained to conform to these approved conducts, regardless of their better judgment of what was right for their crews. They knew that there was great important attached to the results of the audits. As I have remarked earlier in relation to the Esso Longford gas disaster, safety audits which give good grades to refineries have sometimes been revealed to have provided false measures of safety.

Matt Barnard described the effect of the audit process on safety communication and how there was a scramble to perform communication so it could be ticked off by the auditors.

> In preparation for the last audit, we knew that we had to show that we'd done some particular communication. We made sure that it was all done. It was pretty intense. For the final six months before [the audit], our [foremen] would have felt inundated by the material that was passed down to them.[152]

From here, it was only a short step to having foremen perform important supervisory tasks by rote rather than through conviction. Grenier (1988) observed this development while a participant/observer at the Johnson & Johnson plant in the USA. As I referred to in Chapter 5, a confrontation between management and the union caused shop floor relations to deteriorate, so that the people chairing the shop floor meetings took to reading management's memos verbatim at their team meetings rather than engaging in a more involved discussion and 'owning' the managerial viewpoint, as they had done previously. This was their response to what they had begun to see as propaganda (p. 129). Yet it does not require an unhappy event such as this to jeopardise the powerful influence for safety existing on the shop floor when 'socially recognised boundaries' (Turner, 1971) of decision are shifted so as to reduce autonomy. Allen (2000) illustrated how powerful were these boundaries in her study of the demarcation of nurses' roles in British hospitals. She found that it was often the nurses who made decisions about patient treatment over the heads of

[152] Interview with Matt Barnard 8 July 2003.

doctors because of various factors including that the nurses were the only caring group present 24 hours a day. This was a case of boundaries being moved downwards in their hierarchy of the organisation. At the refinery, the effect of change programs and process parameters tended to move them upwards from the foremen and supervisors.

Simard and Marchand (1995) observed the importance of autonomy at foreman (and supervisor) level in a large quantitative study of 1,061 industrial work groups in Canada. These researchers looked at the propensity for shop floor workers to participate in the safety culture by taking safety initiatives. They believed that this propensity had earlier been found to be positively correlated with lower frequency rates[153] of lost-time work accidents (p. 113). Simard and Marchand reported: "Workers' propensity to take safety initiatives is higher when the supervisor:[154] (1) has some power and influence over decisions that affect the safety of his workgroup, and (2) practices joint involvement with his work team in the conduct of accident prevention activities" (p. 124). Overall, Simard and Marchand found that workgroup ('micro-level') factors are the primary determinants of the propensity to take safety initiatives compared with organisation-wide ('macro-level') factors. For example, top management's declared commitment to safety did play a role, but an indirect one through its positive influence upon the micro-level factors. The researchers therefore concluded that safety management should be decentralized in order to support safety initiatives at the shop floor level (p. 124); for boundaries to be moved downwards.

* * *

Despite the general upward shift of the boundaries at the refinery, it mattered to crews whether their foreman was in a position to share responsibility for their safety, or was merely acting under direction from those above who the crews judged did not understand their situation. Process cleaner Luca Rossetti and I once spoke about the pressure from management to create a total safety culture, but he was cross that top managers did not have to worry themselves about safety in their own work. He said: 'They don't have to *Wait 1* before they put their hands on the keyboard, or look before they walk down the corridor.'[155] In the same context, I sat in on a

[153] The number of lost-time accidents per million hours worked.
[154] 'Supervisor' in this case equated to foreman.
[155] Personal research diary 1 April 2002.

briefing for a Southend crew regarding the new BBS program being introduced. The aim of the presentation was to win workers' participation in the program. One member of the crew pointedly challenged the presenter by asking whether the program also applied to 'management'. The group also wanted to know that, if they gave their commitment to the program, the company would reciprocate by fixing equipment that the program identified as contributing to risks.

This sense of worker-foreman closeness at the shop floor level, which includes a collaborative involvement in safety, has also been observed in motor car production plants, which have been the subject of many studies. An American car worker who was on the production line at General Motors for 16 years described his situation in Douglas (1980) cited in Littler and Salaman (1985). The worker said that he and his fellow workers knew their jobs better than the people at head office who made even minor decisions about how they should perform their tasks:

> The worker who performs a certain task 320 times a day, 5 days a week, knows more about the specifics of this particular job than anyone else. Yet in 16 years, I have never been consulted on how to improve a job qualitatively or quantitatively. There are suggestion programs but their main concern is 'how to save the company's money'. The auto worker can only build as good as he is instructed or permitted to. We on the line take our cue from those in the head office (p. 92).

Yet, there is evidence that a positive and involving relationship between workers, their foremen and the management hierarchy – particularly if the relationship includes high-quality communication of all types – is positively related to workers being open-minded about safety (Hofmann & Stetzer, 1998). As Kriegler (1984) remarked, drawing on his Australian experience: "Behind the stone wall of occupational classifications reside human beings with deeply felt concerns and convictions about their work, their work-mates and the world about them" (p. ix).

It is one of the roles of foremen to engage with their crews during the 12-hour shifts and construct short-term solutions to refinery matters and events, both expected and unexpected. The quality and quantity of this interaction naturally varies depending on the personality of each foreman, his supervisory style and his relationship with the crew. I noted that some foremen seemed to spend much of the

shift working away from their crews, occupying themselves alone in the production buildings, checking on the operation of the mills, heaters, digesters and so forth – and performing the critical task of isolating equipment with tags. Others seemed to spend considerable time with their men discussing work matters and a many non-work matters.

I have earlier described the importance of toolbox meetings in the supervisory role of all foremen. Gamble (1999, p. 261) found two main purposes for toolbox meetings and these seemed also to apply at the refinery. First, they are intended to provide information on practices, procedures, targets, expected behaviours and organisational rules. Second, they are intended to elicit behavioural responses from the workers that were desired generally by the company, or specifically by the foreman (such as motivation, commitment and team spirit). As aids in holding their toolbox meetings, refinery foremen receive the *Toolbox Topics* along with operational reports, memos and the like. Some of the *Toolbox Topics* are about safety and carry the SMAC brand.

Despite their loss of autonomy in the conduct of their work, the meetings I observed showed that foremen gave themselves much latitude in dealing with information in *Toolbox Topics* and other material. I mentioned in Chapter 5 the short shrift which some foremen gave to such management information. I judged that this was because they had an accurate sense of what information would be attended to and what would be ignored by their men. The short shrift came in three forms: there was a high degree of selectivity used about the information which was passed on to the men. Secondly, a good deal of the management information was coloured with sceptical or derisive comment as it was passed on. This was particularly the case when the information related to issues which the crews and management were then seeing things differently – e.g. the drilling machines. Thirdly, the foremen would rush through the information – barely reading the 'headlines' – so that everyone at the meetings could say the foremen had 'covered' everything. The foremen was able to sign the form which confirmed that the topics had been discussed; and such forms would ultimately be scrutinised in the audit process. I was told that some crews and shifts did hold toolbox and safety meetings at which issues were discussed earnestly and which confirmed to the Orco model. In my time at the refinery, I never saw one.

The meetings I attended consisted of jokes, humorous abuse, strong comment and, rarely, focused discussion.

The second type of crew-level meeting, the safety meeting, tended to be chaired by the crews' Safety Reps without the foremen's attendance. To illustrate what such meetings were like, at one of them the Southend Safety Co-ordinator, Charlie Rogers, made a presentation of some new airhose fittings which were intended to solve some safety problems. Perhaps because the topic was to their advantage and because Charlie was effectively one of them, the crew were initially attentive to his talk; but soon began to pick at Charlie, criticising the new equipment and demanding further improvements. The attacks were light-hearted but determinedly hurtful. In no time, the purpose of the meeting seemed more the entertainment of the crew members than safety. Charlie was soon struggling to hold back his anger at their apparent lack of appreciation for his considerable efforts to get this equipment for them. One member proudly declared the crew's attitude to any change as 'negative until proven successful'. When Charlie finally decided to wind up the session rather than endure more humiliation, he left them with the comment: 'Always a pleasure to deal with Shift E. At least you get an honest answer – bullshit.'[156] My reaction was that such meetings required at least the presence of foremen to help achieve an acceptable degree of effectiveness.

Nevertheless, this was the reality of the toolbox and safety meetings into which apparently important information were directed. The surprising feature was that Orco would persist in the belief that the information they supplied to foremen or supervisors for use at these meetings was dutifully discussed and absorbed. As far as I could see, all the crews and foremen knew that the forms which confirmed that the issues had been discussed with crews were meaningless. They were either a straight lie or they failed to reflect the sham of the 'discussions'. The company's persistence with their attempts to direct information to workers through these meetings seemed to be a combination of stubborn refusal to accept the obvious, a sense that it was the right thing to do and a hope that some information would 'get through' (the 'sticks and fix' principle I discussed earlier).

There seemed to be a poor recognition of what really went on at these

[156] Research diary 8 March 2002.

meetings and how disrespectful the shop floor workers and their foreman were of information which came down to them. That is not to say that management's devotion to its system of toolbox meeting discussion materials was not based on a genuine wish to generate beneficial interaction and insight among crews and their foremen. At no stage of my research did I encounter anything but good intentions behind all the formalised communication of safety. However, I found that these good intentions should have been informed by active interest in how the shop floor functioned and the real outcomes of the communication process.

There appeared to be a further reason for Orco's persistence in what was a patently failing system: that it could say that it had tried to give important information to the workers and that it was their fault if they did not want it. While I was at the refinery, the major reorganisation plan, Challenge 2003, was being planned. Progressive briefing information was provided to workers about this plan via their managers and supervisors. To confirm that this information was actually used, the foremen were given 'receipts' to complete and return to administration. Unfortunately, this specific attempt to check on the state of the information dissemination system confirmed my overall observations. A member of the Communication Group told me: 'We are probably having about a 25% response rate, which I don't think is very good.'[157]

I discussed this matter with the two senior safety managers, Matt Barnard and Andrew Smith. Andrew believed in the value of the toolbox meetings: 'I'd say the most effective [formalised] communication is the toolbox, where typically the foreman or the Safety Rep delivers the information one-to-one to a person.'[158] However, his opinion seemed only theoretical. When I suggested that my observations were that they did not live up to the company's expectations, he readily concurred. Fortunately, the Orco audit was on my side:

> We agree with you. We had this big corporate audit in February and our findings were that the toolboxes were pretty lousy. The structure for recording who was there and who was absent was bad. We realised it was pretty unstructured and quite often not much information was passed.[159]

[157] Group interview 15 April 2002.
[158] Interview with Andrew Smith 18 July 2003.
[159] Interview with Andrew Smith 18 July 2003.

His manager, Matt Barnard, said of the fate of the information provided to crew meetings:

> We tend to take that stuff very seriously – the content, the purpose, the intent – but it doesn't surprise me to learn what you say. The guys don't have any buy-in. [The information] comes out of the ether to them without much lead-up and the foremen don't have much choice about presenting it in a lot of cases.[160]

Andrew said that the outcome of the audit was a decision to introduce tighter controls over the way the toolbox meetings were held, the recording of the topics discussed and the names of those attending and absent. Effectively, there would be stricter rules by which the foremen would have to manage their toolbox meetings. Andrew continued to believe that there were some crews which had good toolbox meetings and good safety. He felt that there was a causal connection – good meetings bring about better safety. His belief in the inherent qualities of the toolbox meeting system remained strong. However, he accepted that good toolbox meetings were atypical among the crews.

> If you did a survey, you'd probably find that a crew with minimal injuries has got a strong foreman, strong Safety Rep and quite often strong union support. And they're probably the guys who do deliver their material with two-way feedback and work as a team. Through our Safety Rep summits we hear that that is only 20 per cent of the crews out there. A lot of people aren't even having toolboxes, probably 50 per cent.[161]

I had not found evidence that the meetings were so often skipped, but it concerned me that introducing more formal demands upon foremen in the way they conducted their meetings would actually intensify the reasons for their ineffectiveness – that they lacked the quality of 'localness' or buy-in to, which Matt Barnard referred.

The dimensions of the foreman/shop floor relationships discussed here were further illuminated by some observations from the Safety Consultant, Steve Bush, who had been a foreman himself. Steve told me how important it was for the foremen to be able to form effective relationships with their crews and communicate with their subordinates at the refinery. He said:

[160] Interview with Matt Barnard 18 July 2003.
[161] Interview with Andrew Smith 18 July 2003.

> People who can do that well seem to handle safety issues better. Because they can help people put [their problems] in the right perspective.

> I would suggest that the younger foremen would probably be the most pro-active of them all. The older foremen who have been around for a long time have grown up with a degree of scepticism and cynicism, and [this] would be reflected in the way they approach safety meetings.[162]

I learnt that the refinery was in the process of developing a cohort of foremen capable of developing good relationships with the people both above and below them, as Steve described. The kinds of foremen being sought were described by one senior manager as 'people people'.

In this light, I felt lucky to be in a crew when a new foreman (Bert Entwhistle) was being trained. Turner (1971) observed in British factories how such a new foreman adjusts to his promotion from the shop floor. Turner found the new foremen should expect to continue his relationship with his former work mates much as before…almost.

> But the transition up the career ladder also indicates that something is now different about the individual. He cannot expect to continue his former relationship exactly as it was, for his continuous membership of his former work group has been interrupted and he no longer has complete knowledge of events occurring within that micro-culture. Also, of course, his higher position in the authority structure may mean that it is not thought appropriate that certain knowledge should be passed up to him (pp. 83-4).

Clues to the change in Bert's status were few, although one understated indicator occurred in the crib room. It involved the bench on which all the operators kept their carry-bags. My crew were ostensibly as friendly as ever with Bert, but one day I saw one of the operators remove Bert's bag from the bench, and place it on the floor below. Later I noticed Bert's bag back in its usual place on the bench, but later still back on the floor. I never saw how Bert resolved the issue of where his bag now belonged, but the bag soon stopped its shuttle and remained on the bench for the rest of my time there. An indicator of the depth of the relationship between Bert and his workmates was that the company made him the foreman for his own crew after his

[162] Interview with Steve Bush 12 December 2001.

training finished. I have previously remarked that I might have expected the company would put him in charge of an unrelated crew so that his would be free of any 'baggage' from his existing relationship with his workmates, and could establish a new relationship with the new crew.

The shop floor workers at the refinery recognised the pivotal position occupied by their foremen. Ralph Anderson, the long-serving head of SMAC, described a nurturing role in relation to safety. I sensed that Ralph wanted to feel that a foreman protected him from hazards and that he was not alone in keeping himself safe. He said: 'I like having a foreman who can look after my welfare.' A confirming comment was made by Turner (1971) who argued that a foreman in an industrial organisation has not only to provide clear guidance to workers about what is expected of them in work but has to extend the protection of his position to them in the daily situations which his workers encounter (p. 83).

Chatting about foremen in the crew room, Darren Redman of my crew said: 'You can talk to them blokes like we are talking now.' Fred Jamieson recognised that foremen also had to 'follow orders' much of the time, including transmitting safety information from top management:

> It must be hard for them because they're having safety being pushed onto them from management upstairs. In some respects, they can't do things the way they want to. But they've still got to tell us to do it. They're the meat in the sandwich.[163]

At the same time, Fred believed that the foremen's approach to safety could be flawed.

> Even though they push safety, they will still let you do things that are unsafe if you can get away with not being hurt. They will stand and watch you do things that are unsafe, knowing that you shouldn't be doing them but they won't say anything because it helps them out of a situation. We will sometimes do things that are unsafe which we're not supposed to – but it won't put you in any sort of grave danger – if we can save maybe an hour. If we get hurt doing that, then it's our fault. If we don't get hurt, it's swept under the carpet.

* * *

[163] Interview with Fred Jamieson 4 April 2002.

While the shop floor workers did recognise the difficulties of the foremen's 'meat in the sandwich' position, their relationship with the foreman was one of providing a resistance. I noticed this at the first toolbox meeting I attended with my crew. The foreman, Chris Jones, was under almost constant attack. He accepted the attacks sometimes with a pained grin, and sometimes by remaining silent until that particular round of banter ran its course. The toolbox meeting appeared to be a special event in the working day of the crew: special for its entertainment value. (This, my inaugural toolbox meeting, was not unusual because of my arrival. Every meeting was like this first one.)

At other times of the shift, almost whenever the foremen needed a task to be done, a ritualised negotiation occurred. My research diary records:

> When the foreman has to ask for a job to be done, there is a period of banter. Then, suddenly, the conversation becomes serious and the negotiation is completed. The crews believe that this is fun for all and the sign of good relations among the shift and their foremen. Perhaps …[164]

The process also signifies that a foreman is in an isolated position, being a single person in charge of a dozen or so workers. He might have formal authority over his people, but his power is relatively weak, forcing him to undergo such negotiations to perform his duties.

Fred Jamieson said to me: 'Our job is to give the foreman a hard time.' When I later asked Chris what he thought of this comment he said: 'They believe that, too.' Chris said he found the toolbox meetings quite an exhausting event to endure. They made his job harder, and unnecessarily longer, but that was what happened with every crew. (Chris had had good experience of all the crews in Southend 1 as 'relief foreman'.) He explained that my crew was apparently no different from normal or special with regard to its behaviour.

The outcome of every toolbox meeting I attended was that Chris eventually got through the shift's task list and communicated the matters which he described to me later as 'not negotiable', despite appearances. All was eventually arranged, but not without much enjoyment for the crew, and effort from Chris.

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164 Personal research diary 12 April 2002.

This was the working life of a foreman: ‘sandwiched’ between the shop floor workers and the first level of professional management. I could see the role required considerable personal skills in leadership to make a success of the relationship with the crew. I guessed, but did not see enough to be certain, that it also required considerable skill in negotiation to make a success of the relationship with the Southend 1 supervisor. Yet it was at this pivotal position of foreman, between shop floor and supervisor, that the communication of the company’s commitment to safety had to be converted into the reality of a zero-injury workforce.

A member of SMAC, Merve Hicks, was an observant person who liked to share his observations about the refinery with me. He had some well-developed ideas about how the refinery could achieve a better safety record and about whether there would need to be a change of safety culture to reach this outcome. His opinion was that personal qualities of leadership would bring about such changes. He believed the company should seek out people with natural leadership qualities and make use of them for the betterment of the working lives of the crews, for their greater safety and so that the organisation would come to value the crews more. Millar (1993) foreshadowed Merve’s observation in a discussion about quality management systems in business. The author was for 12 years the Director of the National Institute for Occupational Safety and Health (NIOSH), the leading US non-government safety and health organisation. Putting Merve’s opinion more loftily, he argued that the cornerstone of both quality management and safety was ‘the fundamental belief in the inestimable value of human beings’ (p. 100).

THE HIERARCHY: SUPERVISORS AND OTHER MIDDLE-MANAGERS

Supervisors were one level above foreman in Southend. They were on the first rung of the professional management ladder, distinguishable from promoted shop floor workers, and were mostly engineering graduates. I noticed while I was at the refinery that supervisors were characteristically in their positions for only a short time. Mark Dawson had been appointed just a few months before I arrived, and was promoted to another plant shortly after my research there ended. Above supervisors in the production section of the refinery were the business centres managers. Our business centre manager was Gary Harnett who had been in his position for about two years.

I have earlier discussed the role played by foremen in communicating safety with their crews, and the belief at shop floor level that the communication gets diluted in the middle management levels of the refinery hierarchy. The members of my crew actually voiced to me a wish that important company information should be conveyed to them clearly and in person by their supervisor or business centre manager. However, in a discussion with my crew, they commented that they 'almost never saw Gary Harnett. Fred Jamieson described how he had once stolen a glance at Gary's diary in his office, and it was full of meetings in his office.

> Greg: I've only seen him once.
>
> George (the Safety Rep): I would probably see more of him [than other members of the crew] but he doesn't show his face enough to other people.
>
> Fred: We only see him in a blue moon.
>
> George: Unfortunately, their job is meetings, meetings, meetings.
>
> Fred: We used to have [managers] who would come down here on the utility days. They would come here at 7 o'clock and sit with you for half an hour and ask you questions and you could get rid of your grievances or you could ask questions. But they're gone now.[165]

They were also disappointed that their supervisor, Mark Dawson, did not often came into the crib room and have a discussion. The crew attributed the lack of personal involvement to pressure of work upon Mark and Gary.

Perhaps expectedly, my crew also felt the best supervisors and middle managers were in the past. Fred Jamieson reminisced about the time when John Williams, a supervisor, had come up through the ranks from the crews. John was a supervisor who was prepared to listen to, and understand, the views of the crews. Fred acknowledged that John turned a blind eye to some of the work practices, but was aware enough to know that the men would 'not greatly endanger' themselves. If something needed to be improved in the way of procedures, he would make sure that a new procedure was available before outlawing the old procedure.

[165] Group interview 4 April 2002.

Angus Hay remarked that there had been seven Southend 1 supervisors since John Williams had left about 5-6 years earlier. In contrast to the popularity of this shop floor supervisor, Kevin Rumer regretted that the current ones tended to be engineers:

> At the moment we've got a chemical[166] engineer and [senior management] seem to be going down that path. They used to be ex-foreman and ex-operators and process controllers but that doesn't happen much any more these days. They tend to have an academic background.

> We had a situation last time there was an advertisement for the supervisor in our department. There were a couple of guys who are our foremen and they know both sides, Southend 1 and 2. So they're quite clued up. And they're quite good man-managers and know the production system intimately. They would have made great supervisors. But it just seems that the company isn't going along that train of thought.[167]

The members of my crew had a changeable relationship with their supervisor, Mark. When he was with them, I felt they enjoyed his company and treated him well. The exchange of banter between Mark and the crew suggested a relaxed relationship, and I could see that Mark enjoyed being verbally toyed with by Fred and Darren in particular. For example, one evening when we were on night shift, Mark turned up during the toolbox meeting on his way home at about 7 o'clock. He hung round at the door to the foreman's room just to observe, but was immediately challenged by Fred who was standing beside him. Mark said something I could not fully hear about being pretty good at boxing; to which Fred shot back: 'I can see you've been battered round the ring' (an off-colour *double entendre*). Mark's smile seemed to express admiration and amusement at Fred's quick wit. Moreover, Mark and Fred then settled into a serious side-discussion on a couple of current issues, including Fred's embarrassing incident when he bashed himself in the crutch with the chip box hoist chain which had caused friction between the two.

Much of the time, however, the crew relationship with Mark was polarised as 'worker vs manager'. The men in my crew seemed to be fulfilling a self-defined 'oppositional' role and no amount of personal liking for the individuals who were

[166] The terms 'process engineer' and 'chemical engineer' are used interchangeably at the refinery.
[167] Interview with Kevin Rumer 8 March 2002.

their supervisors or middle-managers changed their need to be directed, and sometimes coerced, into doing their jobs. Treating Mark as 'management' came easily when he was not around, but harder when he came to visit. Collinson (1992) also found symptoms of this ideological distance when he explored relations between management and workers in a British motor manufacturing plant. He described how 'John', a chairman of the joint negotiating committee of the union confirmed and entrenched the division of 'them and us', sometimes unknowingly. John saw a manager's job as managing and a worker's job as being dragged into compliance. "Management, he said, have to know 'how to take the horse to water'. As he elaborated: 'If somebody asks me in a proper manner, I'll do it' " (p. 54). Collinson argued: "John ignores the extent to which his own defensiveness unwittingly contributes to the reproduction of polarized organizational relations and worker's vulnerability" (p. 54).

In his discussions with me, Mark expressed his frustration at what he felt were the entrenched attitudes of the crew. Nor did he feel he received appropriate support from his foremen. One incident I witnessed illustrated how readily each 'side' would take up its polarised position in the relationship between manager and worker. Several months before I joined my crew, I was spending time with another crew of Southend 1. On this particular day, I found the men in a disturbed mood. It emerged that there had been trouble the previous day over a safety meeting off-site at the refinery's social club organised by this crew's Safety Rep, Graeme Thompson. It was a 'utility day' for this crew, a spare day in their roster in which the men were not needed for their usual duties but were available for training, safety and health briefings or special work duties. This off-site meeting had apparently begun with a presentation by a senior production manager followed by a long safety meeting including presentations by the company physiotherapist and other health specialists. Towards lunch time, a call came through from Mark to tell them all that there was no approval for the off-site meeting and that they should all return on-site. The remainder of the event was therefore cancelled. Mark later explained to me that he had felt trapped into making his decision ordering the men back. While supporting their initiative in safety and health, he could not let them get away with having an unauthorised meeting of this kind. All the crews would soon be getting away with it, he explained. 'It wasn't so much the venue that was the issue. They'd lavished the

whole three-course meal deal, which needs to come from my authorisation. They hadn't got my authorisation, and that was my issue. They were looking for a bit of a party, basically.'[168]

Following Mark's cancellation of the off-site meeting, the situation deteriorated quickly. Graeme Thompson resigned his position as Safety Rep for the crew in protest at what he thought was the unfair cancellation of his important event. Later, Mark allegedly responded by sending Graeme an e-mail (which I was not shown) querying whether Graeme had 'a future in the company'. When I caught up with this event next day, Graeme and the training officer, Frank Brown, were debating the details in the crib room. Frank strongly argued that Graeme should not have resigned because it betrayed the principles for which he held the position. Frank later commented to me that the training for the job of Safety Rep included how to negotiate in such situations to achieve 'win-wins'. Graeme did not respond.

However, the cancellation of the meeting and the hasty return to site were not the end of the altercation between the crew and Mark. Later in the day, the crew discovered that the lunch which they had missed out on at the social club had not been wasted. Mark and some of his fellow-managers had gone to the social club for a meeting of their own and had actually eaten the men's lunch. Mark explained: 'I'd organised a recognition lunch for my guys, because they'd done some good work the week before. We were going to have a lunch, so we made use of theirs.'[169]

It was this act of what the crew saw as treachery which capped off the men's reaction. Not only had their initiative on safety been torpedoed by management, their rights (represented by lunch) had been violated. This event reverberated through Southend for some time afterwards. I felt it was unfortunate that this event coincided with a time when Mark was desperate for the crews to show a sense of initiative and autonomy about their jobs, and particularly about how to do them safely. His action ran counter to the prevailing view of the refinery management that workers tended to under-appreciate hazards because their perceptions of risk were inherently faulty.

* * *

[168] Interview with Mark Dawson 6 February 2002.
[169] Interview with Mark Dawson 6 February 2002.

Luca Rossetti, the process cleaner, once talked to me about the issue of personal responsibility and initiative. He told a story about how, soon after Mark arrived in Southend 1 as supervisor, he (Luca) was doing some work on site when he was visited by Mark and Charlie Rogers, the Southend Safety Co-ordinator. The three of them talked. Mark encouraged Luca to find his own safe solutions to process problems, but clearly Luca was not very receptive. The conversation ended and Mark and Charlie walked on. Charlie later reported back to Luca that Mark had commented when they were out of earshot: 'If they want to work like dinosaurs, let them.' In my later discussion with Mark, he confirmed his belief that workers should take upon themselves greater responsibility for matters around them, rather than 'just pushing problems up to me to solve'.[170] However, Mark gave no indication that he would 'walk away' from attending to the hazards confronting the men.

In fact, the dinosaur comment, and the war of the drilling machines, captured the widespread opinion of the middle-levels of the refinery management hierarchy that workers could not be left to take care of themselves – an opinion also widely held among Australian industrial leaders (IFAP, 2003). According to the opinions of management which I heard, the crews' imperfect perceptions of what was safe (or not) would not protect them from harm. This opinion was investigated by Zohar (2002), who argued that workers have an "inherent bias against safe conduct in seemingly harmless job conditions" (p. 156), by which he meant conditions which were not clearly hazardous. Zohar suggested the reason for this bias is that workers incurred an immediate cost when taking safety precautions in the form of a slower pace of work, extra effort or personal discomfort. Geller (2001) concurred, arguing that safety is a continuous fight with human nature because safe alternatives often bring discomfort, inconvenience and inefficiency(p. 367). Perhaps this was why the Southend crews rebelled against using the new drilling machines. It simply meant more work; and more work was important to them, not just in a selfish way, but because the crews took pride in the efficient conduct of their duties, even though they were the lowest duties in the refinery. The crews had their own sense of skill and efficiency, which was reflected in their desire to execute their tasks quickly and safely. The men were suspected by their foremen and supervisors of only wanting to get back to the pleasant surroundings of the crib room, but I saw a good deal of

[170] Interview with Mark Dawson 6 February 2002.

commitment to their tasks and the refinery: perhaps a product of their long years of working there. Getting back to the crib room was much more than a reflection of idleness. It was a way of demonstrating that they could be given tasks that were sometimes difficult and hazardous, complete them in their own way and return successfully, ready for the next mission.

Mark and those above him in the management hierarchy saw events such as the war of the drilling machines as confirming their perceptions that crews could not be trusted to determine acceptable levels of safety. Instead, they saw it as a management responsibility to coerce workers' safe behaviour. With top management commitment to safety and a variety of innovative change programs, what could go wrong once this responsibility was discharged?

During my last full shift with my crew, something did go wrong. I had an accident of my own. Darren Redman and I had spent several hours dealing with a large spillage of liquid lime and it was now about 2am. The lime is used in the refining process to remove the impurity phosphate before the digestion process takes place. The lime is delivered in bulk to the refinery and stored in an elevated tank in Southend 1. Several times during my time with my crew, a large quantity had escaped from the tank and formed a thick milky liquid in the bunded area below the tank, about 100 square metres in size. When this happened, Darren asked me to help him use high-pressure hoses to wash the lime into a sump from where it was pumped to a waste liquid reclamation pond. The hoses were actually quite hazardous in themselves because of the high pressure of the water supply. It required all our strength to operate a hose which was turned on full.

Moving such a quantity of liquid by hose to the sump was tedious work, made worse by the frequent break-down of the sump pump which was not designed to cope with such a heavy task. Our job became one of alternately hosing the lime and unblocking the pump. There was also no alternative but for us to stand right in the lime pool, so our boots turned white and our overalls became spattered with lime.

It was an awful job. On this night, Darren was called away to another job, leaving me to continue dealing with the lime spill. I soon became exasperated coping with the hose and trying not to slip over in the lime. My diary describes the result:

I accidentally knock my hard hat off and it falls right into the lime pool. Now I am in some difficulty. I cannot go long without head protection but I cannot put down the hose [to collect my hat] because it will thrash about dangerously under its high pressure. By the time I cope with the hose and fish the hard hat out of the lime, it is a real mess.

Then I make the wrong decision. To get back to the safety of the crib room, I decide it would be better to wear the limy hard hat than to go bare-headed. I do not want to face being reported for not wearing the hat, especially being a visitor. I wash the hard hat out with hosewater as best as I can and set off for the crib room. But even as I make my way among the buildings, I can feel the lime beginning to burn the skin of my forehead.

My crew notice my face, but I pretend that I have merely wiped some lime onto me with a hand. I disappear to the bathroom as quickly as I can, and wash the skin. It doesn't look too bad, but I know that I should go to the medical centre for first aid treatment and put in a report. But although I am upset that I have been hurt doing a messy job that should not have been necessary, I keep the incident quiet.[171]

[171] Personal research diary 24 April 2002.

CHAPTER 7:

THE VOICE OF THE WORKERS

The caustic actually permitates into the skin and keeps eating.
The pain is excrutinating.
– Ralph Anderson

Ralph Anderson, a senior maintenance tradesperson at the refinery, was describing the effect on the human body of liquid caustic soda. Ralph is an intense and engaging character whose language is spattered with malapropisms like the ones in his comment above. He is a raconteur, like many of the 'working class lads' recruited to the Orco refinery from the industrial cities of England and Scotland. Ralph has a special duty at the refinery, additional to his work in the maintenance department where he is a fitter. He is chairman of the workers' committee which conducts campaigns promoting safety at the refinery, SMAC.

When the SMAC team was established in 1997, Ralph was the Refinery Manager's first choice to be its inaugural chairman. Much more than just an instinctive communicator, Ralph was well known. He had been at the refinery for almost three decades and knew almost everything about the place, and everyone in it. He was enthusiastic about, and committed to, the safety of his fellow workers. The manager, Eduardo Marcuse, described to me how SMAC came into being:

> We needed to make a step change[172] to reduce injuries. I focused on [myself and my] Production Managers as the people with the accountability to drive the change. I set up for this group to set aside a full week to re-think our leadership for safety. I set up a program to benchmark four US plants…including the two best Orco plants and two Du Pont plants.
>
> At the Du Pont Victoria Texas plant, a huge nylon production facility, we met a team of Safety Representatives running a Site Wide Appreciation Team – SWAT. They had their own agenda and some

[172] A popular management literature phrase indicating something greater than a gradual reduction.

> funding to create their own style of program and to try and have some fun with safety. I liked this program as it put a positive spin on safety which is usually a serious and potentially tedious topic.
>
> Back at [the refinery], I reviewed this with the management team and during this discussion the concept of a similar team was supported. I played with the concept and dreamt up Safety Motivation, Appreciation Recognition Team.
>
> I asked Ralph to lead the team as [he] was our longest serving S&H Rep, an independent thinker and a mischievous personality. He subsequently asked if we could simplify the acronym, so the 'Safety Motivation and Communication' team was born.
>
> Ralph and his team were sponsored by me as the Refinery Manager, as I was keen to have a positive and personal impact on injuries. We agreed on how they could get time, money and organizational support to ensure that they were able to do a professional job.
>
> I was delighted with the creativity of the team and their willingness to dream up new interesting ways to stimulate discussion and controversy including high impact 'entry statements' into the refinery.
>
> Ralph and the team provided a real boost to our safety efforts and in particular made a big difference to the deployment of the concept of 'Zero Injuries'.[173]

Ralph himself said to me of the birth of SMAC: 'The [refinery] manager was looking for a cultural change. He wanted to develop an autonomous type of workforce, with people who start to act responsibly and manage on their own.'[174] As Eduardo's description makes clear, the SMAC arrangement which came about was an agreement that the team of shop floor representatives would contribute their own communication skills for the benefit of the safety of their fellow workers on the understanding that they received management support and that their own positions did not suffer. When Eduardo and Ralph described the formation of SMAC to me in these terms, I immediately saw it as a form of contract between the shop floor and management. The management would contribute 'time, money and organizational support' and, in exchange, the team of shop floor people would contribute their

[173] Personal e-mail message 11 February 2001.
[174] Group discussion 25 October 2001.

authentic voices and perspectives as workers. An important phrase in Eduardo's summary of SMAC's objective is 'stimulate discussion and controversy'.

In the years following this agreement, SMAC both exceeded the original expectations and disappointed them. It exceeded expectations in that managers and workers found that the voice of the workers had great ability to communicate – so much so that all the safety campaigning at the refinery was put under the SMAC 'brand'. On the other hand, it disappointed because the improvement in communication was not sustained. As I investigated SMAC, it gradually became clear that SMAC had not realised its potential because of its lack of self-determination. Management was no longer prepared to give freedom of action to SMAC to express its authentic voice, with the result that, by the time of my visit to the refinery, SMAC failed to communicate as strongly and candidly as it was established to.

It is nonetheless useful to explore the ways in which SMAC did fulfil many, if not all, of the Refinery Manager's expectations in the years following its inception. Its safety campaigns were known by everyone throughout the refinery and some of their promotional concepts were remembered with affection long afterwards – for example, a display promoting safe working at heights which was presented at the main gate of the refinery. The display featured a man one day dangling from a cherry picker (crane) then the next day buried head-first up to his waist in the roadway underneath. Also fondly remembered were the SMAC 'drink runs' in which cans of soft drink were distributed from a truck travelling through the refinery. This was a summer-time promotion to underline the importance of drinking liquids during hot weather. Handing out of packets sweets – 'SMAC SNACS' – had also been popular.

For these and its other campaigns, SMAC achieved its desired high profile and Ralph was still the chairman of the team at the time of my research, although he was finding it ever-harder to be given the free time he needed to devote to SMAC. (In SMAC's earlier years, he told me, his business centre manager had given him sufficient time off his usual duties to do his chairman's duties properly. However, this support had dissipated lately.) Orco's managers came to believe so strongly in the SMAC concept that they had replicated it at other company locations in Australia and overseas. By 2003, the SMAC concept had spread to about 18 teams at Orco locations around the world. I heard a manager of one of these other locations make

the claim that SMAC-type programs were 'making the difference' in the achievement of safety improvements. He said that the management group had tried all the techniques available through conventional means and had extracted from them all the improvements they were capable of delivering. In his opinion, SMAC-type campaigns were necessary to achieve further progress.[175] A member of the refinery Communication Group said: 'Everyone's hanging their hat on SMAC.'[176]

* * *

So SMAC became the brand name for safety in the refinery. The brand comprised both a cartoon character named 'Jack SMAC' and a logotype of the word 'SMAC'. Jack SMAC wore the refinery's blue overalls and white hard hat with the Orco logo. (He sometimes appeared with a foil, Harry Hazard, who constantly fell victim to the refinery's dangers.) The SMAC brand was effectively exploited by the team, and featured in all its promotional campaigns, printed materials and signs. This was the professionalism which Eduardo Marcuse was hoping to achieve. Indeed, so well was the brand exploited in the refinery that it was placed on items which were not produced by SMAC at all, the most obvious example being a series of safety encouragement awards run by Orco which were given the names 'SMAC Attack Award' and 'SMAC Helper Award' and which I have previously described. Externally, SMAC was also used in community relations activities conducted by Orco. In this and other ways, the work of SMAC was blurred into the work of Orco itself. I heard members of Orco's Safety Department and Communication Group talk interchangeably about 'we', meaning the SMAC team and the company. In truth, the real SMAC was limited to just a few activities; personal appearances by Jack SMAC (a refinery worker dressed in costume), main gate displays, safety screen-savers for computer monitors, *Toolbox Topics* for use in toolbox meetings and special event promotions such as the drink runs.

While the SMAC branding was well exploited, much of SMAC's original campaigning verve appeared to have dissipated by the time of my research. The team's motivation now came less from the workers and more from the members of the refinery's Safety Department who were increasingly represented on the team. The meetings which I attended were mostly chaired not by Ralph but by Andrew

[175] Cross-site safety team meeting 1 March 2002.
[176] Group interview 21 November 2000.

Smith, the refinery's Health and Safety Supervisor, who was a young university-educated professional. I also discovered that SMAC campaigns had become more conventional and less stimulating. In the early days of SMAC, these campaigns tended to be provocative and even daring. A member of the refinery Communication Group , Jean Wingate, commented: 'They used to be close to the bone and [that was] on purpose at times. We had a lot of really funny displays which made an impact.'[177] She also criticised what I believed to be an important feature of the SMAC displays, their evident amateurishness. On McLuhan's (1964) argument that the selection of medium of communication influences the communication, the amateurishness of the displays confirmed that it was the work of the workers, not the work of the company. However, she said they made the plant look untidy. 'I don't like them doing that. It's down to earth but a bit ugly.'

It was not only because they were under pressure to be tidier that the team became less adventurous. I was able to observe the team make preparations for a new campaign, which was on the theme of washing the skin after contact with liquid caustic soda. The team wanted to get the message across that 20 minutes under an emergency shower was the minimum first aid treatment, and that any clothes which were soaked with caustic should be stripped off. The medium of the team's campaign was to be a large signboard erected at the main gate accompanied by two mannequins acting the part of workers coping with a caustic 'burn'. The debate over the display was partly conducted by an exchange of e-mails among the SMAC team and the refinery's senior managers. It went as follows.

One team member made the suggestion that one of the mannequins should be shown naked, to emphasise that sometimes workers should remove contaminated clothing. 'Whip 'em off or burn it off' is the way this person expressed this message. The next correspondent commented that the campaign should: 'send the right message **with impact** [his emphasis] but without creating a major offence to generally accepted moral values.' Next, a female member of the team commented: 'I think it'll be OK. We'll get some comments anyway, BUT the message we need to send is REMOVE ALL CLOTHING.' Then, the Refinery Manager e-mailed his comment:

[177] Interview with Jean Wingate 15 May 2002.

> Folks, I don't think we should use a nude mannequin at the main gate but I totally agree we need to get the message across that people have to take their clothes off if they get caustic on them. I don't mean to be over sensitive but we do have visitors coming into the plant who may be offended. Can we do something that still gets the impact but doesn't involve a totally nude mannequin?
>
> The work that SMAC as (sic) been doing this year is excellent & very much appreciated.[178]

That was the end of the e-mail correspondence on this matter. I interpreted this close of the debate as the Refinery Manager's successful re-affirmation of the limits of the team's self-determination. In such ways, I was to discover, the presentation of the SMAC campaigns had become an expression of the management's expectations.

Top management had also adopted the practice of deciding which safety themes would be used for the SMAC campaigns. The team was now expected to run its campaigns in harmony with the formal safety program of the refinery. Thus, the program's focus on rules and compliance was mirrored by a compliance campaign run simultaneously by SMAC. The introduction of the plant-wide BBS program was supported through a campaign by SMAC. Finally, although the Refinery Manager did not attend the SMAC meetings, he often joined in the e-mail discussions among the members when campaigns were being planned, as illustrated above. His comments were presented as hardly more than just opinions, rather than orders from the top, but I found that their effect was to swing the debate his way.

That is not to say that the members of SMAC and top management attached the same meaning to the issues on which they campaigned. I observed that shop floor representatives on SMAC saw some issues quite differently. For example, they accepted that compliance with refinery rules was an important contributor to workplace safety, but they believed that the best way to achieve conformity with rules was to show workers the advantages of complying. SMAC therefore staged a presentation at the main gate in which workers were shown two paths: the path of safety which led to a happy life among colleagues and family, and the path of risk-taking which led to a painful death in caustic soda. On the other hand, top

[178] Internal e-mail 24 July 2002.

management and the Safety Department saw compliance as an issue to be communicated and implemented for its own sake.

In summary, the Safety Motivation and Communication team had been established to conduct the refinery's safety campaigning using what was intended to be the authentic voice of the shop floor workers – the authenticity coming in part from the somewhat rough and ready style which seemed to express, and to appeal to, the shop floor. Whether or not the refinery's top managers ever ceded substantial control for safety campaigns to SMAC in its first four years, by the time I was doing my research at the refinery they had used their influence to modify the voice of the workers in both form and substance. The media of campaigning were made more tidy, presentable and professional, and the content was censored. In addition, the time made available to the SMAC team members to participate in campaign planning and execution was restricted, and people from the Safety Department stepped into the gap, which resulted in a significant shift in representation from the former group to the latter. This shift was visible at the monthly SMAC planning meetings which were now chaired by the Health and Safety Supervisor and generally attended by at least one other member of the Safety Department and a member of the Communication Group.

Evidence of how closely SMAC had come to management was clear. The following extract from my research diary is an illustration:

> I attend one of the monthly SMAC planning meetings. This time, of all the people I have seen there previously, only the Health and Safety Supervisor, Andrew Smith, is present. George Christo attends with me and there are two others who I have met previously. Even Andrew Smith seems to think that this is a pretty thin turn-out.
>
> There is discussion about a SMAC promotion of the BBS program which is coming up soon. The promotion is timed to assist the introduction of BBS at the refinery.
>
> Andrew summarises that SMAC had a good result from its promotion in support of the refinery-wide 'clean-up day' which occurred a week ago. He reports that the Refinery Manager has been putting the pressure on to have monthly displays instead of the present bi-monthly ones, but Andrew comments that the manager doesn't always

> appreciate the resources and effort required to achieve this level of activity.[179]

Yet it seemed that the very management people who were now constraining the self-determination of SMAC were also regretting its inevitable loss of originality and authenticity. A Refinery Manager expressed his wish for the team's work to be more communicative and for the main gate displays to be changed more often. The member of the Communication Group who participated in SMAC said: 'I think it's had its heyday,' reflecting the opinion of other members of management I spoke to. They seemed unaware of their own ironic role in its deterioration.

* * *

When there is committed communication initiated by workers with workers – such as SMAC – certain outcomes can be expected. One is that the communication will be more effective than management communication of the same information (Whalen, 2001). Secondly, worker-initiated communication will successfully coexist with management communication in a workplace. (For instance, when SMAC campaigns at the emotional level to avoid the path of risk-taking, the company communicates at the cognitive level with the correct information and methods of doing so.) Thirdly, it will help satisfy the shop floor workers' need to compare different sources of information and make their own judgment of their validity and value. However, there are still relatively few examples of worker-initiated communication occurring, so that the literature contains little guidance to confirm that these expected outcomes eventuate. Clampitt and Downs (1993) argued that receivers of the communication are able to take into account different sources and types of messages in their assessment of information. They also are able to give higher credibility to some sources versus others, the communication or public relations group likely to scoring the lowest for source credibility (Callison & Zillman, 2002). There is also evidence that they are able to see 'two sides of the same coin' when interpreting messages about risk and safety (R. L. Heath & Palenchar, 2000). That is, they can react negatively when receiving information that the company is putting them at risk, but positively when receiving information that the company is doing something to reduce that risk.

[179] Personal research diary 2 April 2002.

These characteristics of formalised communication in an organisation suggest that worker-initiated communication of safety may intensify the effectiveness of management-initiated communication in achieving a safer workforce. However, the organisation must achieve an understanding of how the two sources interact and a determination to make use of them appropriately. At the refinery, comments by the refinery's top management and safety managers suggested they were unable to make a distinction between the individual validities of the communication performed by SMAC and of their own formalised communication. They expressed their commitment for open and honest communication with the workers, and seemed aware of the special nature of the SMAC team's ability to communicate in the voices of their workmates. (They all liked to cite their favourite SMAC campaigns.) Yet, in practice, the commitment did not always seem to be borne out, nor perhaps even understood. To fulfil the original contract with the team, managers needed to 'let go' of a function which traditionally belongs exclusively to them.

A particularly good reason to do this was the recognition by some that SMAC were better communicators. The members of the SMAC team prided themselves on their sensitivity to their audience and their knowledge of the safety and health subjects. One of its members, Tony Kent, said: 'We can be the best communicators because we've worked in that situation. We can present something which the guys can relate to, and that's where our professionalism comes in.'[180] A member of the Communication Group said: 'The SMAC communication is casual but very credible.'[181] Compare this with a comment by a Refinery Manager of his own Communication Group: 'We don't really have any communications professionals in the [refinery] organisation.'[182]

* * *

The SMAC team held an annual planning meeting off-site at a pricey riverside conference centre. The refinery's Occupational Health, Safety and Environment Manager, Mike Ferrari, briefed the team about the safety issues and commented on some dangerous near-injuries. Overall, he said, safety needed serious, if not urgent, attention. SMAC was wanted. When the Refinery Manager addressed

[180] Interview with Tony Kent 25 October 2001.
[181] Group interview 21 November 2000.
[182] Interview with Jon McIntosh 9 December 2000.

the team, he also told them how valuable SMAC was. He then made what seemed a significant statement of support, 'putting his money where his mouth is' by saying that he would make available whatever money the team considered they needed, adding 'within reason'. Budgets were tight but he would even take funds from another area of activity if that was necessary, he said. The members of the team reminded him that their money should correctly come from the heads of the refinery's business centres, the reason being that such funding was both a sign of commitment from the business centre managers and a form of sponsorship of promotional campaigns. (The arrangement was that each business centre would work with SMAC to devise, plan and produce one campaign a year using the business centre's financial contribution but also its human and material resources.) This was an opportunity for the SMAC people to confess that this arrangement had almost ceased, because of the perceived indifference of the business centre managers, the lack of attention paid by management to these established mechanisms for refinery-wide sponsorship and involvement, and their own inaction. Here was another sign that SMAC was in decline.

However, the address by the Refinery Manager and the top safety manager had established a mood of zeal among the SMAC members. These two had both praised and encouraged the team to continue their valuable work and suggested solutions to some of their main problems. Yet, the most important problem preventing the team from achieving its potential – freedom to communicate in the authentic voice of its audience – remained unaddressed. Instead, symbolic of the degree to which SMAC had become a creature of management was the amount of time which the team spent at this annual event performing rituals which more closely characterised an Orco corporate planning retreat – brainstorming a new mission statement, workshopping a SWOT[183] analysis and whiteboarding key benchmarks of performance.

* * *

I argued above that worker initiated communication may intensify the effectiveness of management-initiated communication in achieving a safer workforce. It is necessary to examine whether this was true of the work of SMAC,

[183] Strengths, Weaknesses, Opportunities and Threats

with its main gate displays, appearances by Jack SMAC, toolbox meeting materials and special events. The optimism which accompanied SMAC's introduction, the team's own assessment of its effectiveness as 4.5 out of 5, and my own belief in SMAC's potential, should not obscure the fact that this form of safety campaigning at the refinery was only partially successful, even at its best. When I asked people at random what they thought of SMAC, there were many shop floor workers who detested its campaigns, though not as many as those who enjoyed them. In the middle was a majority who expressed mild pleasure.

Bill Munro, a Southend operator who was in a different crew from mine, was representative of the middle group. As a worker who knew his job tasks intimately, he believed that the SMAC campaigns would only indirectly affect how he performed those tasks. He could not cite a specific instance when SMAC information had been 'of great help' to him in his work. He did notice the displays, or Jack SMAC visits. He said: 'You've got to because it's there. It might be an unconscious thing. I don't concentrate on what's put in front of me, but then again I don't go out of my way to avoid it.'[184]. Among the operators in my crew were these summary opinions about the SMAC campaigns for the year 2002:

> Darren: They're all shit.
>
> George: I'm part of the SMAC team and I reckon it's a waste of time, personally. Maybe not a waste of time…but I don't think they're something you'd look at and do something [differently].
>
> Fred: I think the displays are in the wrong place [at the main gate]. When you're leaving you just want to get home. When you're coming in you want to get up here because your relief is waiting for you.
>
> Darren: The best part of those SMAC things was when they used to give you a packet of SMAC Attacks and a cool drink, but they've stopped that now.
>
> Fred: If they had things around the plant during your working day, if you were to walk past them, you'd stop and look at them.[185]

[184] Interview with Bill Munro 9 January 2002.
[185] Group interview 2 April 2002.

Darren and Fred were expressing their reservations about specific promotional activities, while George was expressing his overall reservation about the value of the campaigns.

JACK SMAC APPEARANCES

At the main gate one February morning, I experienced workers' responses first hand, as my research diary records:

> It is 5.45am on Valentine's day and a few of us are 'blockading' the entrance to the refinery. This is a SMAC blockade, and I am here because I want to personally experience the communication effectiveness of SMAC. The SMAC crew, in fact just four of them, are having a safety promotion at the main gate to coincide with the end of the 12-hour night shift and the start of the day shift. Tony Kent is inside the life-size Jack SMAC costume which is dressed in blue overalls and foam head with hard hat on top. A few others of the SMAC people are handing out heart-shaped sweets and small stickers with safety messages which have natty messages.

Love is splendid. So's being suspended. Attach your harness. Love Jack

Falling in love is the only fall we want from you! Love Jack

Who loves you baby? Jack loves you safe

> It is interesting to see how the workers are responding to the promotion. Jack is a highly effective focus for the promotion because he catches the eye and clowns around, which the rest of us can't do. Nevertheless, about a quarter of the arriving workers and most of the departing ones pay no attention to him and seem somewhat put out by his presence. Another quarter respond positively and perhaps get a hug or handshake. The remainder seem somewhere between embarrassed and amused.

> Jack actually can't talk and the other members of the group are shy of interaction with the general workers, so they tend to reserve their attention to people they know personally.
>
> I decide I will try being Jack but I am not anticipating the difficulty of being him. I borrow Tony's overalls and have the heavy, soft head placed over me. It's like putting your head in a lion's mouth, it's so enclosing.
>
> This creates a different reality. I am looking out through Jack's mouth. My vision is immediately reduced to a small arc virtually straight in front of me and mostly obscured by black gauze intended to prevent people seeing my eyes looking out through Jack's teeth! I have to tilt my neck back to see who is approaching me. Trussed up like a Christmas turkey I find it very hard to act the part of a funny cartoon character. Tony is close to me giving me directions about who to hug and who not, but I get mostly the wrong people anyhow.
>
> I find it very strange to be smiling and silently mouthing words to the people I am greeting. It takes me a while to adjust to the fact that the face of Jack himself remains smiling but unchanging regardless of my expression. I'm very glad that he is preventing people seeing how foolish I feel. After perhaps 20 minutes, Tony takes over from me and I realise how professional he is at this difficult job. This is the closest I have come to seeing SMAC at work among the target people. I can see it was having a good effect among a reasonable number of workers.[186]

On the surface, Jack SMAC's activities, like this one, are frivolous. Most of the workers passing by were clearly unimpressed or not particularly interested. But Jack is a message in himself for others. Just to be amused by his antics, to be greeted by a handshake or hug and to receive a little gift was a reinforcement of the refinery's serious safety messages. My short period as Jack SMAC struck me as providing only a fleeting impression, and it was only when watching Tony being Jack did I realise that substantial communication of the safety message was taking place with a worthwhile proportion of workers. I was suddenly aware that part of my feelings of foolishness came from the foreignness of the situation. It was not a form of communication which I had ever participated in. It was also not a form of communication which 'outsiders' – such as myself or perhaps the refinery's top managers – could readily relate to. Later that morning, I overheard a conversation in

[186] Personal research diary 14 February 2002.

which one of the top managers complained to Mike Ferrari that Jack had almost caused a pedestrian/car accident at the refinery entrance. This manager wanted the SMAC promotions to go somewhere else in future. I had actually seen the incident to which the manager referred, and the manager was certainly exaggerating its seriousness. What he seemed to be expressing was his contempt for safety promotion, Jack SMAC's activities and perhaps even SMAC itself. His high position in the refinery meant that his corridor complaint could not be ignored. Within hours, members of the SMAC team were talking about it. I interpreted his action as signalling his disrespect for SMAC and as a sabotage of its activities.

MAIN GATE DISPLAYS

The struggle for SMAC to speak with the voices of the workers seemed to me symbolised by a steel shipping container located in a lonely corner of the refinery which housed all the material from years of SMAC campaigns. The posters, mannequins, stage sets, displays and other equipment had accumulated over this time. By the time I was researching at the refinery, the SMAC main gate displays were mostly pieced together from this cache of old items, rather than constructed anew. Sometimes the result of this practice of recycling old ideas and materials were too obvious. At one stage during my research, I saw a SMAC display at the main gate which promoted the drinking of liquids during hot weather. The display consisted of two-dimensional plywood cut-outs of a monkey, a camel and a beer glass. They were all the same height, about one and a half metres tall. The monkey held the camel by a lead. There was a message banner which read: 'Think Safe, Stay Safe, Work Safe, Play Safe'. I could not fathom the meaning of the monkey, the beer glass and the camel on a lead. I discussed it with the main gate staff. They could not make out what the figures signified either but with advantage of seeing the display all day, had pretty well worked out a meaning. I was left to wonder what passing workers made of the display? I did not see it receiving any attention. A member of SMAC later explained that he had set up the display by himself with just the materials he could find in the storage container because no one was available to assist him. In my time at the refinery, none of the main gate displays seemed much better than the one with the monkey, the beer glass and the camel on a lead.

SCREEN-SAVERS

The third main SMAC activity are the screen-savers which carry safety messages on all the Orco desk-top computers. The screen-savers are fun, bright and eye-catching, though not particularly stylish. Jack SMAC is used as a cartoon personality giving a wide variety of messages about aspects of safety. Each screen-saver is used for three-to-four months before a new one replaces it. The screen-savers began about four years before my research, when some of the SMAC team formed a sub-group to organise them. The sub-group's work was soon noticed by other people in Orco's SMAC-type teams in Australia, who formed a 'Safety Screen Cross-Site Development Team', chaired by SMAC member, Merve Hicks. This team coordinated the production by a professional software company of the screen-savers, which are used by all the Orco sites. The screen-saver team developed its own charter and a sophisticated process for designing and approving the screen-savers, which satisfies the company's administrative requirements. Merve explained to me how the team puts a lot of effort into making sure the information is correct from the perspectives of safety management, decency and technical accuracy. Once again, I felt this correctness jeopardised the communication effectiveness of the screen-savers, but I understood that the development team had no choice if their products were to be used on the official company intranet. It appeared to me that the team's desire to be seen as professional, correct and well-organised had exposed their work to unnecessary criticism and scrutiny. Merve showed me one previous screen-saver which was the equivalent of the emergency shower display which I have already discussed. This screen-saver showed a naked cartoon man in a shower with the caption: 'The nurses are on their way. Yippee!' Although the screen-saver was far from salacious , this caption was modified when reservations were expressed about its potential to offend some people.

TOOLBOX TOPICS

I have discussed the use of *Toolbox Topics* at crew meetings in Chapters 5 and 6. *Toolbox Topics* contain material for discussion at these meetings and are generated mostly by the Safety Department, the Communication Group or top management. Because the toolbox meetings are compulsory and official, *Toolbox Topics* are perceived by crews as official company material rather than worker-

initiated material. In this way, SMAC lent its brand to the company but appeared to receive little in return but exposure of the brand. On the other hand, by doing so, SMAC is probably sacrificing some of its credibility as the voice of the workers, a fact which probably makes its struggle to remain effective all the harder.

* * *

I was disappointed to see SMAC struggling to achieve its potential in the ways illustrated by the displays, screen-savers and *Toolbox Topics*. I had been excited at the prospect of researching a campaign initiated by shop floor people, but what I found was less novel and interesting than I had expected. Not only were the shop floor people in the team being displaced by representatives of the Safety Department, the originality of the work had apparently declined. SMAC was certainly not dead or even moribund, but appeared stuck in a state of permanent failure to thrive. Investigations of 'permanently failing organisations' have shown that their low performance brings into play divergent interests which previously have been latent (M. W. Meyer & Zucker, 1989). The effect of the divergent interests is to blur the organisation's focus and sustain its low performance indefinitely. It was possible to see that the divergent interests brought into place at the refinery included: top management (which desired to maintain control over the content and style of the SMAC safety campaigns), the business centre managers (who seemed more comfortable with safety management than safety campaigns) and the shop floor workers (who failed to respond enthusiastically to the SMAC efforts). The fuss over the alleged near accident at the main gate on Valentine's Day seemed to me an example of the emergence of divergent interests. I could not predict what the future of SMAC would be, except that the unsatisfactory situation I found seemed indeed permanent. Perhaps it was too harsh to call it permanent failure because the company remained committed to SMAC in some form. The Health and Safety Supervisor, Andrew Smith, and his manager, Matt Barnard, told me of their wish to restore SMAC to its former strength. Meanwhile, a further sign of its condition was the tendency for SMAC people to become members of the refinery's Safety Department. For example, Merve Hicks seemed the most able and enthusiastic member of the team, and had led one of SMAC's most successful projects which had impressed management, the safety screen-savers. One member of the Safety Department suggested to me that Merve was keen to move into safety management itself. Tony

Kent had already made this transition from the shop floor through his contribution to SMAC, and so had Jock Hay. Perhaps for this reason, the workings of SMAC were increasingly emulating that of Orco proper. Rather than capitalising on their own qualities of relevance and naturalness, the SMAC team were prone to the hazards of bureaucracy, and attracted to performing a managerial role.

An opportunity arose during my time at the refinery to compare SMAC's situation with that of its offspring. I was able to join our team at a meeting of all the SMAC-type teams from Orco's regional sites. There were about 30 people in attendance, many of whom wore the special T-shirts of their particular teams. There was SWAT and RAP and WISE (which all stood for something) and around the walls of the meeting room were display boards illustrating each of the team's campaign activities, all similarly lively and down-to-earth. What struck me most of all as we assembled, however, was the sense of enjoyment among this elite collection of people as they compared each others' campaigns. Here at last were Orco people having 'some fun with safety', to use Eduardo Marcuse's original phrase.

At the lunch break during this meeting, I sat next to a young man who appeared earnest and dedicated to his work as an electrical technician at one of the other company sites. He described how, a few days earlier, he had caused a major safety incident in which he had tagged for maintenance the wrong pump in a line of four pumps. Tagging is one of the most critical acts entrusted to anyone in this industry, because the safety and lives of others depend entirely on it being done correctly. The approved 'tagger' places a tag on a piece of equipment which is to be taken out of service. The machinery must not be operated until the same tagger removes that tag. Any breach of the tagging rules will probably result in the equipment being re-started while others are working on it. My lunch companion was therefore dismayed at the thought that maintenance had been performed on a pump which he had not even tagged. Luckily, his inattention had not injured anyone. He described how all the instructions and catchphrases drilled into him during his years with Orco, not to mention his participation in SMAC, had been fruitless because he had simply focused his mind on the wrong pump. It confirmed in his mind that 'zero injuries' was impossible, a sentiment which aligned him with the opinion of most Orco workers I talked to, but which was at odds with the official company policy.

* * *

My investigations at the refinery showed me that having a mechanism for workers to communicate with fellow workers in their own voice presented the refinery's management with a challenge. The challenge had both practical and ethical dimensions. The practical ones included how to maintain the vigour of a workers' team on a permanent basis, when it might be expected that pressures of work and the passing of time would gradually sap that vigour. Yet, by infusing the team with its own people and support, management jeopardised the very qualities it valued. The ethical issues included the fulfilment of the informal contract between Orco and the workers who had launched SMAC all those years before. In my time at the refinery, management maintained firm control of SMAC's content and style with the result that much of its natural effectiveness was removed.

For all that, I argue that a large workplace such as the refinery can gain from the efforts of teams like SMAC. SMAC can communicate in ways otherwise unavailable to management and can impart messages with which Orco is not corporately comfortable. As Gilsdorf (1998) found: "Informal, nonhierarchical means of communication appear to fill in gaps between what employees want to know and what management has time, attention, or inclination to tell them" (p. 175). What is not certain is the effect of such communication when the authentic voice of workers is indistinct. At the refinery, the shop floor workers began to perceive SMAC as the voice of management rather than the voice of workers. They appeared to be highly selective in attending to the information which SMAC provided to them and filtered out the messages of these campaigns which they judged to be tainted by management influence. There was no clearer indicator of taint than when SMAC partnered the refinery in Orco's programs. Such a close association with management was obvious to SMAC's shop floor workers, who are a tough audience. I believe it is authenticity which makes or unmakes SMAC as a communication medium, and the workers appear able to detect the merest signs of inauthenticity. At the heart of authenticity is SMAC's intrinsic problem: management wants SMAC to communicate information according to management's agenda – not according to worker priorities. What SMAC needs is to be trusted to communicate information which the workers *do* feel is a priority.

CHAPTER 8:

DISCUSSION AND CONCLUSION

At the start of this thesis, I explained that my research was about the communication of safety at the Orco refinery, and principally about the formalised communication performed by the top managers and their Communication Group to help achieve a 'zero-injury workforce'. In the chapters which followed, I looked at features of the working life of the refinery which influenced how the process of safety communication operated. My appreciation of these features emerged during my research from what seemed, at first, to be the somewhat amorphous landscape of the refinery community. I grouped my analysis of the features under four general heads: the formation of rules (both formal and informal) which tend to direct safe behaviour; the workplace culture of the refinery (again both formal and informal) in which the principles of safety are acted out; the effect of the refinery's hierarchical structure on the culture of the shop floor and the response of the workers to safety communication; and fourthly, a description and analysis of a worker-initiated safety communication campaign dubbed SMAC.

I now want to draw together the outcomes of these analyses in order to interpret what they reveal regarding safety communication at the refinery.

In Chapter 4, I analysed how the communication and enforcement of organisational rules plays a crucial role in several ways including: establishing a zero-injury workplace culture and climate, giving all workers clarity of purpose which enables them efficiently to perform their tasks (Deal & Kennedy, 1982, p. 15), and helps keep them safe from harm (Leplat, 1998). At Orco, management came to the conclusion that workers' failure to comply with the standard task and safety rules of the refinery was a fundamental reason for accidents continuing to happen – perhaps *the* fundamental reason. In this light, they instituted greater enforcement of rules which was illustrated by several examples of harsh punishment for serious rule-breaking. This remedy was implemented at the time when top management was also trying to change the shop floor culture to one in which safe thinking and safe actions

were more firmly embedded in workers' cognitions and behaviour; in effect, management were trying to ensure that the workers would not countenance taking risks when performing their tasks. Coinciding with stricter rule enforcement and culture change was a third means of bringing about greater safety: the introduction of a program based on the safety management approach called behaviour-based safety (BBS). The new program required each workmate to critically watch how others did their work and discuss with them what they observed.

These were the three special schemes being used simultaneously to achieve the single objective of reducing workforce injuries to nil. Top management believed that each scheme had a 'track record' of successfully reducing accidents elsewhere in Orco or in other organisations. The BBS approach was borrowed from another Orco alumina refinery, where it had reportedly done well. The program of culture change was a fashionable process widely advocated in management literature and consulting practices. Rule enforcement appeared to have been adopted because investigation of accidents revealed that non-compliance was a frequent factor; consequently it was believed that the direct inducement of compliance through sanctions (and to a lesser degree rewards) would make a contribution to reducing accidents. There was nothing theoretically wrong with using multiple approaches because each could make a contribution to the overall progress towards zero injuries. Possibly, each could be effective with different people.

However, I found there was something problematic about the simultaneous application of these three approaches, in that they produced mutual contradictions. On the shop floor, the working life was a localised blend of formal and informal ways of doing things which created a robust community that seemed able to resist most external forces, including that of management. While most workers appeared to concur with the few high-profile punishments which were imposed for serious disobedience, they resented the generalised tighter discipline impacting upon work practices because they felt it addressed symptoms of unsafe behaviour, rather than the causes. The workers felt pretty sure they knew why people did the wrong thing, and punishment wasn't going to fix it. The BBS system clashed directly with the informal culture of the shop floor because it required workers to do something which was awkward: to criticise their mates about how they did their work. Participation in BBS was voluntary and slow to catch on. Moreover, the workers mainly used it as a

way of identifying faults in the plant, not faults in each other's behaviour. Thirdly, BBS and discipline clashed for the obvious reason that the former aimed to secure rule-conformity through affiliation, while discipline aimed to secure it through compulsion. Further, BBS was marketed to the crews with the promise that the workers would not be disciplined as a result of any bad behaviour it revealed. The crews struggled to rationalise the two.

My discussion of rules identified what I felt was the importance of the context in which work was done at the refinery and in which the rules were applied. The context was refinery plant and machinery which effused an almost anthropomorphic determination not to conform to the design rules by which it had been constructed. In his history of the company in Australia, Blainey (1997) made frequent comment regarding how the refinery had 'behaved' badly from start-up, almost 40 years before I was there. In the face of this mechanical recalcitrance, the operators, cleaners, controllers and maintenance workers felt they were struggling to make the refinery produce adequate quantities and quality of alumina. The process engineers and managers laboured to achieve a financial return which was competitive with other refineries around the world. I noticed that the process engineers, and to a lesser degree the managers, seemed to view the contrariness of the plant and its operators as two aspects of the same problem. The solution which they adopted was to seek to impose the organisation's rules on the workers while imposing the design rules on the plant and machinery. The solution which the *crews* adopted, in response to the challenges posed by the refinery and the injunctions to change practices from what had become entrenched and second-nature behaviours, was to devise informal remedies by adapting formal rules, or making up entirely new rules if necessary. They thought this resulted in a more streamlined operation. Therefore, they transformed themselves from being part of the problem to being part of the solution, or at least this is how they saw it. This was a feature which Harris (1987) also found, in which management of the fertiliser works was substantially unaware of the informal goodwill and the productive contribution made by their shop floor workers to the functioning of the plant beyond their call of duty.

Despite this well-intentioned commitment to effective efficiency (rather than 'the rules'), Harris's workers and those at my Orco refinery were vulnerable in any enforcement-based system. It was always possible for the rule-makers to find some

non-compliance. This is because of an essential conundrum of rules: while they are written to encompass every aspect of a worker's job, they can never do so. No matter how detailed the standard working instructions of the refinery were, they could never be sufficiently detailed to apply to every part of every task in all conceivable circumstances. In fact, the SWIs were not so ideally detailed. This forced the workers to make informal rules to fill the gaps, but it also allowed management to find non-compliance in any situation if it wished to.

The workers had one very effective response to this problem, for it was they who wrote the initial reports when unsafe incidents or accidents occurred. The company had devised a computer-based incident reporting application. Any worker who recognised a safety problem or incurred an injury had to generate a report using the computer application. There were multiple-choice questions which allowed the workers to make judgments about where the blame for the problem or incident lay. I noticed that the workers usually chose to blame an organisational failure or equipment failure. Rarely did they blame one another. Through this mechanism, the workers were able to partially resist the trend for Orco to blame them.

In Chapter 5, I analysed how the messages about safety which reached the shop floor were both amplified and distorted by the culture through which they passed. A number of important features of the shop floor emerged from this discussion; among them the ambiguity, fluidity, diversity and intensity of workplace culture. As a starting point, I felt it was important to investigate the approaches to theorising culture in workplaces. The two principal conceptualisations which I identified relate to objective versus subjective notions of social reality: that social reality is external to the individual or that it is socially constructed. These two approaches are represented by the two main schools of organisation study: functionalist and interpretive respectively.[187] Management literature tends to favour the functionalist conceptualisation to organisational culture and communication, and provides managers with tools to assess culture and to manage it. In contrast, scholarly discussion of culture and communication tends to favour the interpretive approach, including in the context of formalised organisational communication.

[187] A separate conceptualisation using critical theory is exemplified by two less popular schools of organisational theory, the radical humanist and the radical structuralist (Putnam, 1983). I decided not to pursue these latter schools because I did not consider such a discussion would contribute significantly to my understanding by being included, nor detract by being excluded.

The actions of management at the refinery suggested the company pursued a functionalist conceptualisation of culture. Managers talked about analysing and changing the shop floor culture, about good and bad cultures, and about using culture for particular purposes. Adams and Ingersoll (1990) described this situation: "Organizational 'culture' became another technique for the manager's tool kit, and many companies set out to reshape their 'culture,' in much the same way that, say, a strategic plan might be initiated" (p. 16). This view was applied to safety culture at Orco, and led to the assumption that safety culture is a thing to be reshaped through communication, cooperation and coercion. From this stand-point, top management believed that it possessed a vision of safety culture which the shop floor workers should apply.

Notwithstanding this situation, however, a more interpretive stand-point might have introduced doubts into the minds of top management, and led to recognition of the possibility that the refinery *was* the culture. This was the situation which Turner (1971) wished us to understand when he coined the term 'industrial subculture'. He was using his term to refer to the meaning system attached to all manufacturing workplaces: a strata of human activity whose cultural locus is the industrial workplace. He clearly felt that everyone who worked in industrial settings had sufficient in common to justify his uniting them into a single subculture, even though they might nominally have been differentiated into workers, managers, professionals, etc. While at work, they were more strongly differentiated from those in the community outside than from other inhabitants of the internal culture (p. 5). I certainly saw evidence of a unifying culture across the refinery, although this is not to say it was cohesive. The tensions present in the workplace were evident between workers, managers, professionals and technicians. Yet I felt that the cultural formation of the refinery was strongly upward, from shop floor to top management, even though management felt that *it* determined the culture of the refinery, top down.

Also in Chapter 5, I described my observations about the intensity of the shop floor experience which brought about its power to determine culture locally. I argued that the functionalist and interpretive conceptualisations of culture (and safety culture) each carries its own consequences. The functionalist view takes organisations down the path which Beck and Woolfson (1999) criticised as manipulative because one group (managers) feels entitled to change the culture of

another group (workers) so that it resemble its own. This might not have been so perilous except that managers did not believe they were doing anything particularly important, for example, if managers acted as if it were no more significant than adopting a new work procedure. However, this is not the case: management adopts the concept of workplace culture for the very reason that it is 'big'. At issue here is the manipulation of the workers' beliefs, norms, attitudes, rites and practices (Pidgeon, 1991).

To adopt an alternative, interpretive approach provides organisations with the opportunity to be more humble. It opens up the prospect of top management engaging with the culture of the shop floor to develop a vision and practice of zero injuries. In the area of formalised safety communication, it requires communication professionals to understand the workers' values and beliefs before they attempt to develop any message which will connect with them. This communication helps organisations avoid the situation that D'Aprix (1977) lamented in which "the leadership states its hopes, goals, and priorities for the organization in terms that mean little or nothing to those who must accomplish them" (p. 16). I found that the global Orco company does not have management systems or a philosophy which would support an interpretive communication approach. My informant in the company's Cleveland head office said that two-way symmetrical communication is an alien concept in the organisation. The objective of communication is to get messages through for the purpose of meeting the needs of the corporation. [188]

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In Chapter 6, I analysed how the messages about safety were also affected by the hierarchical nature of their dissemination. The accepted wisdom of contemporary safety management is that the prime safety message in any organisation comes in the form of stated commitment by the chief executive (Geller, 2000). This person enunciates the objective which he expects everyone to work towards. While I was at the refinery, the Refinery Managers firmly grasped this goal and frequently stated their commitment to the prime safety message of a zero-injury workforce. I found most workers did not doubt this commitment, and some were aware that the

[188] Interview with Michael Trott 9 June 2002.

investment in high levels of safety and to the zero-injury ideal at Orco was far superior to that in other workplaces. Nevertheless, most believed zero injuries to be an impossible target.

Clearly, there were traps for a Refinery Manager making such an uncompromising commitment to achieving an impeccable ideal of safety. The shop floor had an interest in how such an outcome was going to be achieved and their approval for this ideal was not unconditional. Moreover, they were aware that to achieve the objective of an impeccable standard of safety required impeccable, or close to impeccable, implementation. The commitment of the Refinery Manager was vulnerable to the chain of managers, supervisors and safety specialists below him who had to implement a mass of detail. His challenge was not to get everything right once and then move on to other things: but to get everything right all the time. Down on the shop floor, the workers were quick to find fault when something was not right.

The workers' expectations of management might seem harsh, but it was Orco's corporate decision to set the target of zero injuries, and every step towards achieving this target made the next step harder. Moreover, many felt that it was appropriate for top management to carry this burden because it would be the most effective way of progressing towards zero injuries – an argument for management responsibility which Hopkins termed 'utilitarian' (1995, p. 15). However, the workers' expectations of management paled alongside the managers' zero-injury expectation of workers. In graphic terms, the nearer to zero, the steeper the curve. That is not to say that I found the workers sitting back dolefully observing whether the company would get to zero or fall on its face trying. I found very few examples of workers being so unconnected with the viability of the refinery generally and its safety in particular. (They were actually paid an annual bonus amounting to many hundreds of dollars if the refinery had a good year in terms of production and safety outcomes.) However, there was widespread scepticism that the full target could be reached and an equally widespread belief that they (the workers) had good ideas about how improved safety could be achieved which management did not sufficiently value. There was a gap between how management envisaged the progress towards zero injuries and how the workers envisaged it.

In Chapter 6, I analysed one feature of this gap between worker and management views of injury prevention: management's global faith in what Reason

(1997) called the 'person model' of accident causation. The person model pays attention to the attitudes and behaviour of workers, as opposed to the organisation or the plant. I explained how this faith in the person model obscured organisational factors[189] and, to a lesser extent, engineering ones, as possible underlying contributors to accidents (Hofmann & Morgeson, 1999; Pidgeon, 1991; Simard & Marchand, 1997). Agreement on the reason for accidents is a fundamental step along the way towards eliminating them. The refinery workers certainly did not share management's faith in the person model of accident causation, which was understandable. However, it has been shown that workers are more prepared to attribute the cause of accidents to their own actions when the safety environment and safety communication are good (Hofmann & Stetzer, 1998). This points to an important contribution that management can make to the safety of shop floor workers – to put in place a good safety environment and excellent safety communication.

With so many engineers, the refinery was also a place where problems were readily categorised as engineering ones with engineering solutions.[190] The workers did share this perception of engineering causation and would often show me examples of bad engineering which made their work more difficult and hazardous. The perception of workers was that safety problems were usually fixed only after a good deal of haggling. (The perception of managers was that problems were fixed when they were valid.) More generally, the workers felt that their judgments about how to perform their tasks safely were not sufficiently respected. They believed in the adage of safety psychologist Scott Geller (2002): "The line-workers or operators are the true safety experts of a work setting." This difference in perception scored a deep divide between the two groups and fundamentally harmed their inter-relationship. For me, the war of the drilling machines illustrated how this gap was so easily forced wider by ill-managed events.

I also found two features of management's managing of safety which partly undid the benefits of the Refinery Manager's stated commitment: a degree of amateurism or laxity in relation to safety and communication, and a tendency to managerial fads. The former was exhibited in the deficiency of specialist knowledge of safety management among senior management and the refinery's safety

[189] For example, long shifts may cause fatigue-related accidents.
[190] 'Engineering' includes ergonomic solutions, the matching of the physical person to the job.

professionals. The fadism was exhibited in the attitude I found towards the new safety programs being introduced when I was at the refinery. The workers asked themselves: Were these serious reforms or was management game-playing? Management, on the other hand, judged amateurism purely in terms of the execution of safety communication and was not prepared, during my time at the refinery, to invest time and other resources in the worker-manager SMAC safety campaign.

* * *

In Chapter 7, I described what happened when top management of the refinery had partially relaxed its control of the process of safety communication (both the content and style) by setting up the Safety Motivation and Communication team. SMAC was able to communicate in ways which management could not and successfully imparted messages where management might not. When founded four years before my first arrival at the refinery, this worker-initiated safety communication team had been given a high degree of autonomy to decide what and how to communicate to workers regarding safety. While novel, irreverent and entertaining, SMAC was also amateurish, imprecise and tactless (in some eyes). All in all, the messages of SMAC were just not like Orco messages, and this took some getting used to. The work of SMAC stood apart from that of management. It therefore seemed to confirm the role which Gilsdorf (1998) identified as important because it was informal, nonhierarchical and able to tell workers what management did not or would not (p. 175). By the time of my research, the attitude of the refinery's top management to SMAC had evolved beyond wholehearted support to one of 'management'. They acknowledged SMAC's distinct qualities, but at the same time did not recognise SMAC as a serious form of communication with the workforce. A major independent[191] audit in 2003 reported: 'The SMAC team is the catalyst for a very good on-the-job safety focus. They are extremely active with their safety focus initiatives and appear to be well received by the employees.' SMAC helped the refinery earn an 'Excellent' rating for its Communication Methods, one of only two categories to receive excellent ratings of the entire 43 categories of the safety and health audit. Later, in 2003, the refinery completed an informal assessment of SMAC-type teams in Orco worldwide (Winter, 2003). The assessment

[191] The audit was conducted in February 2003 by members of Orco's Australian head office and was therefore independent of the refinery.

concluded that the teams were helping to raise the profile of safety and to reduce injuries. Overall, the teams were rated as highly successful, measured by employee feedback, reduction in injuries following promotions and [audit] ratings. Members of the teams generally concurred in the opinion that: 'Teams work better if they are driven by and/or supported by shop floor employee involvement' (Winter, 2003, p. 34).

This was a reminder from within the organisation that the unique characteristics of SMAC communication emanated from the voice of workers, not the voice of the management. The voice of the workers embodied the characteristics of non-hierarchical communication which Gildsorf found valuable. My research revealed management's nervousness about this voice; approving of it in theory, but disapproving in practice. That is not to gainsay the commitment which Orco had made in establishing and encouraging SMAC, just that the challenge of maintaining its vigour year after year had been solved by diluting the team with managerial staff, ostensibly to supplement worker labour and increase resources available, but this jeopardised the very qualities management valued. As such, SMAC was created through a form of contract whose conditions appear not to have been sufficiently honoured.

SMAC's effectiveness was also dependent on the workers' perceptions of its relationship with the organisation. SMAC's efforts were increasingly diverted to programs which were clearly management's, such as the campaign on compliance with rules. Management did not seem to grasp how important it was to sustain the workers' perception of the independence of the SMAC campaigns, even at the cost of occasional embarrassment about bad taste, because this helped preserve the credibility of SMAC as a source. A practical problem was that all the safety campaigning at the refinery had been put under the SMAC 'brand' so that top management had limited media through which to conduct its own safety communication campaigns separate from those of SMAC.

Worker-initiated safety communication has the potential to be effective because it satisfies, at least partly, the conditions of successful employee communication identified by researchers such as Cameron and McCollum (1993) and Grunig (1992). That is, successful communication should be two-way in nature. This is so for two reasons. Firstly, workers may simply feel it satisfies their desire to

be part of a two-way communication process. I saw how SMAC was a positive opportunity for workers to be communicators and to represent the views of their workmates to each other and to management. The second reason is that teams like SMAC are credible sources of information. It has long been recognised that the effectiveness of communication is source-specific. In a workplace, it has generally been believed that the workers' preferred source of communication is their foreman, but Sinickas (1992) is among researchers who have used information obtained from communication audits of workplaces to argue that the full situation is not so simple. Information content determines the preferred source.

> Company periodicals or special brochures often will be the preferred source of detailed or highly graphic information or facts people need to see in print before they will believe the company means it. For other subjects, only top management sources will do because employees don't believe their supervisors would really know the answers. And supervisors will be the preferred source for a number of subjects, generally those where a company-wide issue needs to be interpreted; at local and 'my job' level (p. 27).

Lengel and Daft (1988) also investigated information sources which appealed to shop floor workers. They found evidence that shop floor workers consider a complex matrix of message content and sources in determining which information they accept and which they reject. These studies, and my research, suggest that the refinery made a correct judgment in assigning its safety campaigning to a team of its own workers, but missed the opportunity, however, of allowing the team to fulfil its potential.

* * *

The foregoing review of the four central features of my thesis leads to some conclusions about how safety and communication relate to each other in a workplace such as Orco's refinery, about the value of a participative culture, about congruence among cultures in a workplace and finally about re-orienting communication so that it is informed by the culture of the shop floor rather than by the culture of top management.

Almost three years ago, I had set out with the intention of investigating the shop floor responses to formalised safety communication in the refinery. While examining how communication about safety was interpreted and actioned, I became

aware of how the culture of those sending the information was very different from that of those who were intended to respond. At this stage, I had heard of the refinery's SMAC team and so was interested to learn about the safety campaigns which it conducted.

I was therefore able to frame my prime research question, as it appears at the start of this thesis: How do the shop floor workers at the refinery respond to safety communication, and do they respond best to worker-initiated safety communication? I broke this question down into the following sub-questions:

- How do workers establish their own understanding of safety (which is not necessarily that of management)?
- How do workers safely conduct their work duties, and make their interpretations of their roles and their safety obligations?
- How do workers respond to formalised communication, to their own informal communication, and to the relationship between the two?
- Is workers' safety culture different from the company's?

At this early stage of my research, the ethnographic method precluded my proposing any immediate hypotheses for testing. Instead, I had to be patient for any hypothesis emerged from the data gathered during my research experience at the refinery.

In due course, in the ensuing period of observation and the subsequent deliberation and analysis, the following hypotheses did emerge:

1. That formalised communication of safety at the refinery positively influences the safety awareness, attitudes and behaviour of shop floor workers.
2. That the shop floor culture strongly[192] mediates the formalised safety communication.
3. That the formalised safety communication is also mediated by effects of the organisation's hierarchy, rules, and informal organisation.

[192] The term 'strongly' implies a significant level of correlation between the mediating factors of the affecting culture of the shop floor and the management communication of safety.

4. That the acceptance of worker-initiated safety communication relates to its perceived independence from management.

Some of these hypotheses evolved early and were readily confirmed. This happened in the case of the third hypothesis: that the formalised safety communication is mediated by effects of the organisation's hierarchy, rules, and informal organisation. Most striking for me was how slight the evidence was supporting the first hypothesis. In fact, the first hypothesis remains unproven, and this caused me some consternation. Perhaps I was reluctant to concede that formalised safety communication could be so lacking in evident effectiveness. As a former practitioner of formalised communication, I was surprised to observe how poorly received were the staff newsletter and other examples of formalised communication produced at the refinery. The refinery had done its own research which suggested they were well-appreciated. There were also the periodic audits which confirmed that the refinery was producing all the information and campaigns on safety which the company required. Moreover, I saw how dedicated were the efforts of the Refinery Manager and his colleagues to try to make these products informative and persuasive.

On the other hand, I did observe what D'Aprix (1982) described as the desire of top management to misuse such communication in order to persuade workers of matters which were irrelevant to them. D'Aprix argued that successful communication depends upon the recipient rather than the sender (p. 17), but this was not the perception at the refinery.

The fourth of the above hypotheses, relating to SMAC – that the acceptance of worker-initiated safety communication relates to its perceived independence from management – was weakly confirmed by the end of my research. It was a pity that the SMAC which existed while I was there was not the SMAC in its original form. It had been considerably weakened by the influence of management, so that I was forced to draw on the memories of other people to learn what SMAC used to be like.[193] This recollected evidence provided an apparent correlation between the degree of freedom which SMAC had enjoyed and its effectiveness, which supported

[193] I could never be sure whether people accurately recalled the campaigns of the 'original' SMAC but I was reasonably confident of their opinions that they liked the original SMAC more than the current one.

this hypothesis. I felt I could conclude that a necessary condition of effective safety communication is its worker-orientation, without suggesting that this is a sufficient condition. In view of the apparent failure of formalised communication to achieve its intended objective, further research of worker-initiated communicated seems warranted.

The hypothesis which was confirmed with growing likelihood during my research was the third one – that the shop floor culture strongly mediates formalised safety communication. I had an early hunch that this mediating effect would be considerable, and this hunch became a strongly held opinion. I discovered that the shop floor culture was able to resist not just management communication, but well-prepared cultural change programs as well. In the worst case, clichéd, scenario I had anticipated finding that the shop floor culture was rebellious, insubordinate and obdurate. I did not expect to find a shop floor culture without a leadership structure and a bureaucracy equivalent to management's, yet coherent and purposeful. This culture mostly shared the safety objectives of management and was intent on making the refinery a commercial success, but it had its own means of achieving these ends.

For me, this realisation regarding the supportiveness of the shop floor culture confirmed my concerns about the appropriateness and efficacy of the prevailing management passion for normative control through culture change. As Petersen (1999) argued, such a normative culture approach will only succeed if all the other aspects of an organisation's human relationships are in an ideal condition first; which would suggest that the cultural approach may well only be successful when it is not necessary.

* * *

I will conclude by setting out my arguments for the research outcomes that I believe flow from these hypotheses. At the refinery, as I have shown, I had little confidence that formalised communication with the workers was successful. Even though their survey results were positive, the Refinery Managers and members of the Communication Group doubted the effectiveness of items such as the staff newsletter. Moreover, there was no method in place to validly gauge whether the formalised communication was effective.[194] This is not to make a harsh comment

[194] Interview with Matt Barnard, 18 July 2003.

about those responsible. Formalised communication with the workforce faces major challenges in any workplace deriving from its form, content and process. There is ample research to suggest that workers do not respond well to formalised communication of any kind, except for information specifically about the their organisation's prospects or their own prospects. (Safety communication which is intended to make workers change their beliefs, values, norms, rites and practices does not fit the description of information about 'their organisation's prospects or their own prospects'.) Recent research of 65,000 Australian employees found that only 38% said they were satisfied with the quality of communication (both formalised and informal) which took place in their organisations and only 42% gave any positive rating to corporate information which they received through formalised communication channels (Gray, 2000, p. 2).

The formalised safety communication at the refinery was directed at a shop floor culture which proved able to resist its intended effects. This was despite much top management time and resources being spent on it. I concluded that if an organisation is able to change the attitudes and behaviour of the shop floor through formalised communication, it will do so only slowly and to a small degree. How much more slowly and to an even smaller degree is it able to change the beliefs, values, norms, rites and practices which comprise a shop floor culture. Yet this was the objective which Orco had set for itself in aiming for a zero-injury workforce. The more I experienced the shop floor culture, the more I felt certain of how much it differed from top management's understanding of it.

Clearly, a force much stronger than formalised communication will be required to bridge the gap between management and workers. Kunda (1992) provided an insight into this force in his study of Tech, where the career-hungry young technocrats were keen partners in the company's objective of re-engineering their culture. Tech was a company headed by a dynamic chief executive who had a reputation for inspirational and despotic leadership. Yet even in this company with a workforce overwhelmingly committed to cultural re-engineering, Kunda found 'extra-culturals' populating Tech's equivalent of the shop floor. Orco was not a company such as Tech, or at least not in its Australian manifestation. The shop floor workers at the refinery were actively vigilant regarding, and resistant against, any managerial attempt to re-engineer *their* culture.

As I have argued, any improvement of safety at the refinery through the effects of communication will be principally through informal communication generated by the relationships of Orco people at all levels. Lengel and Daft (1988) showed the complex process by which managers draw on their native communication talents to select the best way of communicating in workplaces. Complex though the process is, it is effective. It was clear from my observations at the refinery that it was through management's (including foremen) native communication talents that safety was mostly communicated with the shop floor. Formalised communication of safety played a supportive role to informal communication and its effects were constrained by its messages being culturally-defined by the senders and resisted by the local cultures of the receivers.

Yet both the management and shop floor cultures embraced the concept of safe work. I encountered no one on the shop floor who accepted workers being injured. The only negative argument I encountered was with the principle that injuries could be eliminated altogether (and even a Refinery Manager himself equivocated about this). When the shop floor workers argued that injuries could not be eliminated, it was because they felt that the company must first eliminate the everyday hazards to which they were exposed. Their secondary argument was that such a vast, complex and dangerous plant would have 'act-of-God' events which could injure someone entirely at random. (This was also the argument of the Refinery Manager.)

How then could these two culturally-created sets of attitudes and beliefs about safety be brought into congruence, if not equivalence? What is the optimum role of the 'weak' force – formalised communication – in relation to the strong force, the shop floor culture? I argue that it is through accepting that the existing shop floor culture has its own potential to achieve the desired outcome of safe work practices that this objective might be reached. If the company is correct in believing that a zero-injury workforce can only be achieved by having a total safety culture in place, my research suggests that the shop floor culture is the only foundation upon which this can be built.

Consider two central dimensions of shop floor safety culture: the willingness of workers to take safety initiatives and their propensity to behave in proven safe ways. These were investigated by Simand and Marchand (1995; 1997) in two large

Canadian industrial studies which I have discussed earlier. The studies revealed the value of harnessing the shop floor culture (including the foremen) for safety purposes, rather than harnessing the more distant culture of top management. Simand and Marchand concluded from the first study that safety management should be decentralized in order to induce the shop floor workers to take their own safety initiatives. They concluded from the second study that the primary determinants of the propensity of shop floor workers to behave in proven safe ways were the social relationships on the shop floor, including with their foremen.

What might be the outcome of a management attempting to find congruence with its shop floor culture? To answer this question, it is valuable to briefly revisit the work of Harris (1987) which I have discussed at various points in this thesis. My experience at the refinery was that the shop floor workers were empowered and willing contributors to the success of their organisation and therefore to safety. Their preparedness to work safely, however, was determined locally in their work teams. Harris (1987) came to a similar conclusion after rejecting the assertion of Marxist workplace researchers led by Braverman (1975) and Burawoy (1979) who argued that shop floor workers are fundamentally powerless; consequently, any apparent 'consent' by workers to the circumstances of their working lives was ultimately a fabrication manufactured by management in order to leverage 'surplus value' from them. Harris found consent constructed locally on the shop floor of the two plants she studied, and corroborated this finding by showing how the consent took two forms because of the two types of shop floor-management relationships which prevailed in the plants.

Instead of the Marxist perspective, Harris found that shop floor workers exercised local autonomy to a sufficient degree to put them simultaneously both inside and outside the command structure of the organisation. The range of actions which they took to operate their part of the plant was composed of the formal task instructions given to them by management and their locally developed solutions to problems produced by the plant. Moreover, the workers did not contribute their energy to the organisation reluctantly in a process which Braverman (1975) and Burawoy (1979) described as an unequal contract. In fact, Harris (1987) found that much of the productivity of the fertiliser works she investigated was dependent on the day-to-day goodwill of the ordinary workers (p. 234).

As an example of this, take Harris's apparently recalcitrant operator Basil. He was rather like Fred Jamieson at the Orco refinery in that he showed robust independence even while taking good care of his part of the plant. "He combined an almost insolent rejection of inessential instructions with an alert awareness of the real functional requirements of his job" (p. 235). Harris argued that the refinery manager was unaware of all the various ways in which the shop floor workers contributed genuine goodwill to the productivity of the factory, relying instead on the notion that worker productivity came from direct instructions. Worse than that, he was ignorant of how he and his senior managers unnecessarily antagonised these men and jeopardised their goodwill.

Harris was interested in how understandings of control were constructed in 'her' plant. My interest is in how understandings of safety was constructed by workers at Orco and how formalised communication mediates these understandings. This interest became more important for my research when I discovered at the refinery what Harris had discovered at the chemical works: that the culture of the shop floor workers is so removed from the knowledge of top managers that the top managers are substantially ignorant of how to communicate their safety messages into this culture. The outcome at the refinery was that the management communication did not have the effect which it was intended to have – to help build a participative climate and inform workers' judgments about safety attitudes and behaviour. In fact, it had direct effects which it was not intended to have, including accentuation of the cultural distance between the management and shop floor and sensitising workers to inconsistencies in their treatment by management.

The consequence is that safety communication should have a high degree of mutuality, implying a genuine exchange of information, ideas and meanings. Botan (1997) justified such two-way 'dialogic' communication from an ethical perspective. On the other hand, Grunig (1992) claimed to find that two-way symmetrical communication contributes to organisations achieving their objectives. Both arguments apply in the case of safety communication because the objective of few injuries has both an ethical dimension and an organisational dimension.

It might be assumed that interpersonal communication in an organisation lends itself most readily to mutuality, and that formalised communication is naturally one-way. However, I argue that formalised communication can have the quality of

mutuality without all its forms being two-way or dialogic in themselves. The typical products of formalised communication (staff newsletters, videos, briefing notes and other informational material) have the external attributes of one-way communication. They can also have actual qualities of two-way communication, however, if the organisation undertakes certain actions. For example, information in these formalised communication products should be produced out of a comprehensive program of involvement and consultation with employees. This should best occur in the form of a special upward communication program. The products should be produced with the mindset that they should create meaning for their audience and must be relevant to them. Through these efforts, employees will begin to reverse their perceptions that these products are one-way communication from the company management to them and begin to see them as representing everyone's opinions and information needs. For this reason, I argue that the quality of mutuality does not reside in the media of communication but in the consciousness behind them. With the right programs and approaches even apparently 'downward communication' can occur as an information- or meaning-sharing process. Evidence of this change might be found in the mindset of a chief executive who writes his or her regular column in the company staff newsletter. At the outset, the chief executive will write with the thought: 'I need to get the message through to the troops'. The end-point will be an acceptance that the column is a dialogue with the employees, and the subject matter will be based perhaps on a recent chat with a shop floor crew.

When Cameron and McCollum (1993) investigated the effects of communication in what they called the 'competing cultures' of workplaces, they came to the same conclusion: an awareness of dialogue is critical. It is worth taking a moment to look at this investigation. The focus of Cameron and McCollum's research was the relationship between organisational culture and communication, looking at the producers and consumers of organizational media channels (p. 248). Their approach was interpretive rather than functionalist, emphasising the meanings that workers place on their communication experience and relationships, rather than the effect of the messages upon workers. This approach is founded on the notion that workers scrutinise their organisation, the communicators and the communication media as a prelude to scrutinising the information.

Cameron and McCollum argued that effective formalised communication should respect the people who are its audience: in this case, the workers. To use my terminology, it should shift its orientation towards the shop floor culture and away from the top management culture. In Cameron and McCollum's belief, "downward communication should be a reaction to the values and beliefs of the receiver instead of the prescribed 'dogma' that employees are supposed to believe" (p. 218). They argued against the prevailing management literature which emphasises the need to communicate a common culture (that of the top management) which is backed by large quantities of research of what is thought to constitute the shop floor culture. "Such research satisfies the objectives of senders but does not consider whether the audience members actually use the information they receive" (p. 218).

The researchers found that consensus between management and workers on organisational definition is a necessary precondition for the shared beliefs which comprise a congruent organisational culture. The more that workers consider they and management do have shared beliefs, the more favourably they evaluate channels used for formalised communication (p. 248). On the other hand, what is often present in cases of divergent organisational definitions is a culture of top management – which controls formalised communication, and a different culture of the shop floor – which is the target of the communication. In this case, the shop floor culture is knitted together by what Cameron and McCollum called 'deeply enmeshed' interpersonal communication systems. The shop floor is characterised by language, stories, banter and jargon which strongly differentiate it from that of top management. This was a situation which also seemed to prevail at the Orco refinery. Cameron and McCollum concluded that communication of the type attempted at the refinery – to help engender a total safety culture – is unlikely to be effective in such a situation. "These lower level systems may have dissimilar beliefs about the organization, so their members may be less receptive to information from outside their own system" (p. 245). They recommended instead that:

> Public relations practitioners should focus attention more on ways to facilitate the two-way communication between management and employees than on creating top-down communication programs. Traditional journalistic methods such as publications should be supplemented by the development of interpersonal channels that actively involve employees. For example, public relations staff might facilitate team meetings, coach supervisors in effective briefing skills,

> and develop group problem-solving sessions. These efforts, in turn, appear to enhance the shared reality of the organization, thereby enhancing effectiveness of information sources such as corporate publications (p. 248).

I argue that, through this greater understanding resulting from two-way communication, the organisation is better able to align more closely to organisational definitions and, therefore, the values of the two groups of the two groups are brought into congruence. These circumstances increase worker acceptance of the channels of formalised communication and, thus, the messages conveyed through these channels. The Communication Group at the Orco refinery would thus be able to fulfil a more important role than the production of safety propaganda for workers. As Grunig, Grunig and Dozier (2002) found, top-tier professional public relations practitioners are able to concentrate their skills on informing top management's understanding of the shop floor culture and creating and promoting two-way communication. This representational role seems to be a reversal of the situation prevailing at the Orco refinery (and in many corporations), in which communication professionals are coerced into the role of carrying out top management's misjudgment of communication (D'Aprix, 1977).

Writing in the Australian context, Ticehurst (1987) also argued that genuine participation of shop floor workers in the process of improving safety required information-sharing and consultation across organisations. The communication activities which facilitated this process were to reflect the fact that all members of organisations attempt to make their own sense of the information which they receive. Ticehurst therefore argued for organisations to conceptualise safety communication as 'meaning-centred' instead of the traditional 'message-centred'. Meaning-centred implies that there is a transaction taking place – a negotiation of meaning between those who originate the information and those who are intended to act upon it. "It also emphasises the importance of feedback between the participants, the importance of non-verbal communication, and the importance of the cultural and social contexts in which the communication takes place" (p. 432).

The organisation characterised by a dialogic relationship between managers and workers has to adopt principles such as that enunciated by D'Aprix: "Communication is the act of the recipient" (1982, p. 17). Such an organisation will accept that the perceptions of the receivers control the outcome of the process. As

Drucker (1974) argued, downward communication can only be effective when it has been informed and formed by upward communication. At the refinery, this change of communication orientation is most important among top management. The Communication Group can assist this process because, I observed, its members are already immersed in the working life of the refinery because they are mostly long-serving employees with some understanding of the shop floor culture. What they lacked was the awareness of a different role for implementing and evaluating effective communication, such as the one described above by D'Aprix (1977; 1982).

In Australia, there exists some belief that a communication orientation characterised by mutuality is necessary for high levels of safety. The large-scale mining industry perception survey discussed in Chapter 6 confirmed a need for better communication for safety (MOHSAB, 2002). The researchers reported:

> Significant differences in perceptions across job groups are evident. These could be addressed through more effective communication at all levels (i.e. manager-supervisor, supervisor-employee and manager-employee) and managers/supervisors allocating more time to discuss safety with employees.
>
> Better training of managers and supervisors in effective communication and people management skills is essential to improving mine site communications and in providing those managers and supervisors with the skills to encourage and promote safe behaviour (p. 6).

While these findings seem to apply principally to informal communication, their imperative applies to all forms of communication in this industry. I argue that a new orientation such as this will aid an organisation in achieving better safety communication and better safety. Research suggests that communication characterised by genuine mutuality can contribute to an organisation's effectiveness by building quality, long-term relationships with employees (J. E. Grunig, 1992; J. E. Grunig & Huang, 2000). If a zero-injury workforce is the effectiveness outcome which the organisation aims for; and if safe attitudes and behaviours among workers are the product of relationships between the workers on the shop floor and the organisation, then formalised communication characterised by mutuality can help improve the quality of safety at the refinery through building sound relationships between managers, supervisors and workers. This notion is different from the

conventional view that safety is the product of rules, safe procedures of work, safety equipment and the encouragement of safe actions.

Formalised communication characterised by mutuality can have further beneficial effects in the organisation. Grunig *et al.* (2002) found strong correlations between several desirable qualities of excellent organisations. Moreover, they used a structural equation model to reveal apparent causal associations among these variables. Grunig *et al.'s* (2002) diagram below shows both the correlation numbers and the directions of the causal associations. While the causal associations and correlations among these variables are somewhat complex, their principal import is that communication alone cannot produce an employee outcome such as satisfaction (as in Grunig *et al.'s* example) or safe behaviour. "Rather, the system of communication must function within the context of structure and culture" (p. 510). The outcomes derived by Grunig *et al.* from their structural equation model are that:

1. Symmetrical communication has a moderate direct effect on participative culture.
2. Participative culture has a strong direct effect on satisfaction with the organisation
3. Symmetrical communication has a smaller but still moderate direct effect on satisfaction, independent of its effect on culture (p. 511)

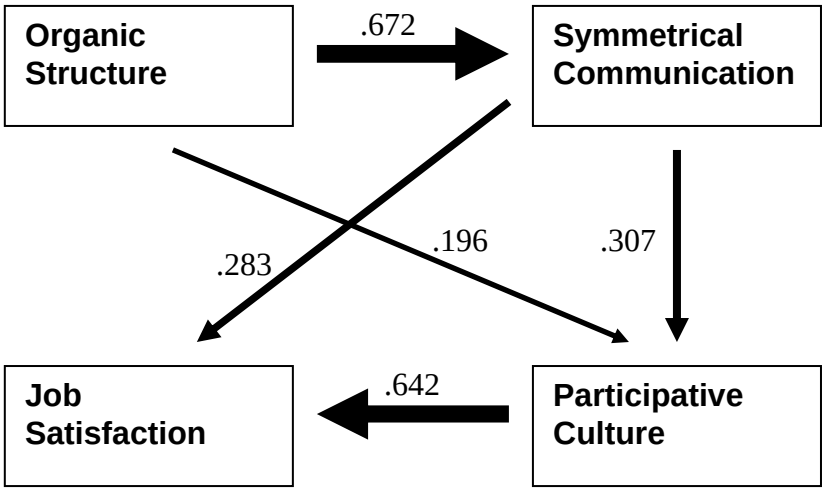

Fig. 2: Structural equation model of internal variables showing correlations, after Grunig *et al.* (2002, p. 510)

The argument by Grunig *et al.* (2002) suggests that the reciprocal relationship between two-way symmetrical communication and the production of a participative

culture provides an opening for the refinery Communication Group which I alluded to earlier. At the refinery, I noticed that members of top management were uncertain whether their Communication Group contributed significantly to engendering the desired safety culture, even though these members thought such an outcome was highly important. In fact, the group *can* achieve this outcome but not through the current process of directing safety messages to the workers and aiding culture change programs. Any significant success is likely to be through the process of engendering mutual communication practices. Sriramesh, Grunig and Dozier (1996) argued:

> Professional communicators can intervene most easily by changing the nature of internal communication rather than trying to manage cultural change through other means. By working to implement a symmetrical system of internal communication, [professional communicators] can, in turn, affect organizational culture (p. 257).

Thus, it is the members of the Communication Group who are well-placed to bring about a change in the communication orientation of their organisation. As in many organisations, I observed that Orco's Communication Group had good shop floor acceptance and their alliances appeared to span both top management and the general workforce. They also had good top management acceptance because they provided an independent source of intelligence about shop floor matters. (Among middle levels of management, the Communication Group presented an opportunity for partially rectifying one of the greatest frustrations of their positions: the quality of communication which they received from 'above' and which they were required to interpret and distribute to the people whom they managed.)[195]

Any group responsible for employee communication with employees which is intent on changing the communication orientation in its organisation may still confront the prevailing orthodoxy of management theory: that the role of management is to manage, and that the route to achieving corporate objectives is to force the workers' cultures into alignment with management's culture. Workers can see through quite sophisticated coercion techniques and I found that they can be

[195] In their research, Harcourt, Richerson and Wattier (1991) found that 62% of middle managers did not think the quality of information they received from their senior managers was good (p. 348).

tough judges. At Ethicon, Grenier (1988) saw that Johnson & Johnson's apparent commitment to open communication and employee involvement became a front for a sophisticated form of control and that this had the effect of throwing back onto the workers the problems encountered in the plant. At the refinery, some shop floor workers felt threatened by the three safety programs being imposed upon them almost simultaneously .Therefore, at the heart of any new orientation of formalised communication in an organisation such as the refinery; there must be a recognition that more can be achieved by working with a shop floor culture than against it. From this perspective comes the additional realisation that there should be less emphasis on coercive change programs such as BBS and 'culture change', and greater emphasis on cooperative programs. Cooperative programs emerge from a process in which there is due weight given to the wants of both the shop floor and management. Such cooperation may be strange to the organisation. These programs may not have the characteristics which management programs generally have, such as documentation, training, consultants and audits. They may be unreliable and partly ineffective. Yet communication driven by the shop floor culture is likely to be more effective than formalised programs. The opinion of a person steeped in the American tradition of formalised programs (Petersen, 1999)[196] demonstrates how this situation might be the case. Petersen argued that behaviour-based approaches will only be successful when a number of pre-requisite conditions exist in an organisation including:

- There is trust and confidence between management and employees;
- Management and employees believe in each other;
- Managers and supervisors trust employees and make them a part of the decision-making, problem-solving process;
- There is an openness in communication or true sharing of information in the organization (p. 31).

I argue that these conditions represent the core of cultural congruence and a new orientation for safety communication. The results of my research, reported in

[196] Petersen is a safety consultant and former President of the National Safety Management Society of the US.

this thesis, present evidence that supports Petersen's argument in the setting of an Australian industrial workplace.

* * *

Such conditions as envisaged above will not happen by themselves, and much of this new orientation in communication is represented in the work of the refinery's SMAC team. As I discovered, SMAC communication about safety is as capable of self-defeat as formalised communication. However, SMAC communication starts out with a number of advantageous characteristics which conform to the model of successful communication outlined. It has a perceived higher relevance because it tends to take seriously what the shop floor takes seriously. SMAC communicators were 'resident' members of the workforce and seen to be subject to influence from shop floor workers and *their* perceptions of relevant issues and opinions. They were seen to be debating and arguing about safety matters with their mates, which made their campaigns more acceptable – or less easy to dismiss. The motivation for their safety communication was more transparent than management's. Other workers could hear their opinions about safety matters any time. The language they used was closer to that of their audience than management's could ever be.

* * *

The study reported here indicates that the findings of researchers such as D'Aprix, Grunig and his co-researchers, and Cameron and McCollum may have wider application beyond the US settings in which they were predominantly located[197], and that these finding may well apply to a range of workplace situations in the industrialised world. In my own research, I have been unable to find any confirmatory research relating to Australian workplaces which links safety communication and the culture of the workforce. While I acknowledge that the refinery in which my study was conducted is part of a US-owned international corporation and therefore that its culture may be partially influenced by the US industrial culture, I nevertheless believe the refinery overwhelmingly reflects the Australian industrial context. It is in this context, therefore, that my study reinforces existing theory of shop floor culture and communication and extends it into the realm of safety communication in a selected large Australian industrial workplace.

[197] Some of the research led by Grunig was of organisations in Canada and the UK.

The limitations of this ethnographic investigation, in which the research is specific to the place and workgroup being studied, make exploration of any wider application of my findings essential. I therefore hope that further research will be conducted of safety communication and the Australian industrial sub-culture with the ultimate objective that working people will be free of the risk of injury.

EPILOGUE

At the end of my concentrated period of research at the refinery, there was a period of more than six months before I visited Southend again. It was evening, and the inky blue of the sky was picked out in the spring green of the emergency shower lights and bright yellow of the building lights. As I neared Southend, I began to look for the features I had previously got to know so well; but the paths were clean. The heaters, digesters, precipitators, calciners, and all the other vessels and pipework were tamely creaking, steaming and humming. Here and there, streams of spilled red liquor were moving towards sumps. I was surprised by how ordinary it all appeared, and how docile as well. In the crib room, my crew were settling in for the night shift – reading a newspaper, heating up some pasta for dinner and chatting to people departing from the previous shift. Again, nothing remarkable. Even the language was everyday. Where had the swearing and the rebelliousness gone?

The members of my crew told me that the war of the drilling machines had been pretty much concluded. All but one of the machines had been modified and they were now operating successfully. The men were using them, except that they hinted that they did not wear the specified rain protection. They also explained that the change to the new shift arrangement was about to occur any day. It was the end of the 12-hour shifts. There would be only a ‘skeleton crew’ on night shift rather than the full crew of process controllers, operators and process cleaners. The men asked me how my project was going. I talked tentatively about my observations and they gave me some responses.

Some while later, as I made my way out of Southend back through the plant, I demanded of myself whether I had invented the things I had spent so long thinking about and analysing in the intervening months. Was the plant much more benign than I had made it out to be? Had I been carried away by the strangeness of the experience and the closeness to the plant of its people? Had the community of the shop floor

been less idiosyncratic and remarkable than I had judged it to be? Why could I now barely see a sign of the things I had earlier ‘discovered’?

There were two answers: that I had indeed been carried away, or that what I observed and experienced was not to be observed and experienced during short and superficial exposures. To answer the question, my mind went back to a conversation I had had towards the end of my research with two senior members of the Safety Department. I had been explaining the importance of acknowledging the intensity of the shop floor culture and how different it is from the culture of the middle or top management. One of these managers, a man who had worked his way up from a foreman position in the company, was nodding in knowing agreement with my words. Every few moments he would mutter encouragement to me to express these opinions. The other, a younger man who had been a university graduate recruit to Orco, indicated by his demeanour that he certainly did not agree with me. I even felt he was offended by what I was saying about his workplace.

A few days later, I recited this experience to one of my key informants, Eion Muffett, the crew member in Southend 1 who was temporarily doing special safety duties. He interpreted the reactions of the two managers as a sign that I had not invented my understanding of the experiences I had had in Southend. The shop floor culture only makes itself evident after patient watching. I had been lucky to have been given the opportunity of patient watching, he said. I should make it my responsibility to explain and persuade the managers that what I saw was real.

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